

# Maharashtra Maritime Board



## STANDARD BIDDING DOCUMENT PROCUREMENT OF CIVIL WORKS

### PART-I COMPLETE BIDDING DOCUMENT

**NAME OF WORK :** Construction of Proposed Office Building on Plot No. C-47 'G' Block at Bandra Kurla Complex (BKC) Mumbai for Maharashtra Maritime Board.

***E-TENDER***

***B-II TENDER FORM***

**GOVERNMENT OF MAHARASHTRA**

AGREEMENT NO-----

**NATIONAL COMPETITIVE BIDDING**  
**(CIVIL WORKS)**

<b>Name of work</b>	:	<b>Construction of Secant pile for proposed office building of Maharashtra Maritime Board on plot no. 47, in G block, Bandra Kurla Complex, Bandra (East), Mumbai.</b>
<b>Tender Issue Date</b>	:	Date.05.03.2018 at10.00 hrs.
<b>Time and date of pre-bid conference</b>	:	Date. 26.03.2018 at 15.00 hrs, <b>Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001.</b>
<b>Opening Date</b> <b><u>(If possible)</u></b>	:	Date. 20.04.2018 at 12.00 hrs <b>Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001</b>
<b>Officer inviting bids</b>		<b>Chief Executive Officer, Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001</b>

**GOVERNMENT OF MAHARASHTRA  
MAHARASHTRA MARITIME BOARD**

**INVITATIONS FOR BIDS (IFB)**

**NATIONAL COMPETITIVE BIDDING**

The Chief Executive Officer, Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001. Invites online bids for the construction of work detailed in the table.

Sr. No.	Name of Work	Approximate value of work Rs.	Earnest Money Deposit (Rs.)	Cost of Document (Rs.)	Period of completion
1	<b>Construction of Proposed Office Building on Plot No. C-47 'G' Block at Bandra Kurla Complex (BKC) Mumbai for Maharashtra Maritime Board.</b>	57,76,30,280/-	28,88,000/-	11,200/-	24 (Twenty-Four) months (Including monsoon)

**E-TENDER TIME SCHEDULE**

**Please Note:** All bid related activities (Process) will be governed by the time schedule given under Key Dates below:

Sr. No.	Activities	Date		Hour	Mins.
1	Publishing Date	05.03.2018	At	10	00
2	Document Download start Date	05.03.2018	At	10	00
3	Document Download End Date	18.04.2018	Up to	17	00
4	Seek clarification start Date	05.03.2018	At	10	00
6	Seek clarification end Date	28.03.2018	Up to	17	00
5	Pre-Bid Meeting	26.03.2018	At	15	00
7	Bid Submission start Date	02.04.2018	At	10	00
8	Bid Submission closing Date	18.04.2018	Up to	17	00
9	Bid Opening Date *(If Possible)	20.04.2018	At	12	00

*\*Dates mentioned here, are scheduled dates for Bid Opening Activities. Any changes in dates of opening of technical and commercial tenders shall be notified in 'Press Notice / Corrigendum' section on the e-Tendering sub portal of the department before opening of the same.*

**Note:-**

1. All eligible / interested Bidders are required to be enrolled on portal <https://mahatenders.gov.in> to participate in e-tendering.
2. Bidders should submit the document related to tender, earnest money and tender document fee under their digital signature online through payment gateway on the e tendering portal.
3. Other instructions can be seen in the tender form. All or any one of the tender may be rejected by competent authority without assigning any reason.

**PROCEDURE UNDER E-TENDERING INSTRUCTION TO BIDDERS**

Tender form, conditions of contract, specifications and contract drawings can be downloaded from <https://mahatenders.gov.in> after entering the details payment of **Rs. 11,200/- (Rupees Eleven Thousand Two Hundred Only) should be paid online using payment gateway. The fees of tender document will be non refundable.**

Further information regarding the work can be obtained from the above office. Affidavit on Rs. 100/- stamp paper in prescribed form given in Annexure I sworn before Executive Magistrate / Notary, Additional Performance Security Deposit (if required) scan copy of original should be submitted online. Bids will be opened as per the Tender Schedule, in the presence of such intending Tenderers or his / their authorized representatives who may be present at that time.

**TENDERING PROCEDURE :****1.1. Blank Tender Forms.**

- 1.1.1 Tender Forms can be downloaded from the e-Tendering portal of Public Works Department, Government of Maharashtra i.e. <https://mahatenders.gov.in> after entering the details of payment towards Tender Fees as per the Tender Schedule.
- 1.1.2 The tender submitted by the tenderer shall be based on the clarification, additional facility offered (if any) by the Department, and this tender shall be unconditional. Conditional tenders will be summarily REJECTED.
- 1.1.3 All tenderers are cautioned that tenders containing any deviation from the contractual terms and conditions, specifications or other requirements and conditional tenders will be treated as non responsive. The contractor should clearly mention in forwarding letter that his offer (in envelope No.1& 2) does not contain any condition, deviations from terms and conditions stipulated in the tender.
- 1.1.4 Tenderers should have valid Class II / III Digital Signature Certificate (DSC) obtained from any Certifying Authorities. In case of requirement of DSC, interested Bidders should go to <https://mahatenders.gov.in> and follow the procedure mentioned in the document ;Procedure for application of Digital Certificate.
- 1.1.5 For any assistance on the use of Electronic Tendering System, the Users may call

the below

Toll Free Ph. No. **1800 30702232/7878107985-86**

E-Mail : [eproc.support@maharashtra.gov.in](mailto:eproc.support@maharashtra.gov.in)

## **1.2 PRE-TENDER CONFERENCE: -**

**1.2.1** Pre-tender conference open to all prospective tenderers who have purchased tender form before the date of Pre-tender Conference, will be held at Mumbai on Dated. **26.03.2018** at **15.00** hrs **Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001, Phone No. (022) 22694475** wherein prospective Tenderers will have an opportunity to obtain clarifications regarding the work and the Tender Conditions.

**1.2.2** The prospective tenderers are free to ask for any additional information or clarification either in writing or orally concerning the work, and the reply to the same will be given by the **Chief Engineer / Superintending Engineer / Executive Engineer**, in writing and this clarification referred to as Common Set of Conditions/Deviations (C.S.D.), shall form part of tender documents and which will also be common and applicable to all tenderers. The point/points if any raised in writing and/or verbally by the contractor in pre-tender conference and not finding place in C.S.D. issued after the pre-bid conference, is/are deemed rejected. In such case the provision in NIT shall prevail. No individual correspondence shall be made thereafter with the contractor in this regard.

**1.2.3** The tender submitted by the tenderer shall be based on the clarification, additional facility offered (if any) by the Department, and this tender shall be unconditional. Conditional tenders shall be summarily REJECTED.

**1.2.4** All tenderers are cautioned that tenders containing any deviation from the contractual terms and conditions, specifications or other requirements and conditional tenders will be treated as non responsive. The contractor should clearly mention in forwarding letter that his offer (in envelope No. 1& 2) does not contain any conditions, deviations from terms and conditions stipulated in the tender.

## **1.3 Special Instructions to the Contractors/Bidders for the e-submission of the bids online through this tender site : <https://mahatenders.gov.in>**

- (1) Bidder must register themselves on <https://mahatenders.gov.in> portal by clicking "Online Bidder Enrollment" and then map Digital Signature certificate.
- (2) Bidder then login to the site giving user id / password chosen during registration.
- (3) The e-token that is registered should be used by the bidder and should not be misused by others.
- (4) The Bidders can update well in advance, the documents such as certificates, purchase order details etc., under **My Documents** option and these can be selected as per tender requirements and then attached along with bid documents during bid submission.
- (5) After downloading / getting the tender schedules, the Bidder should go through them carefully and then submit the documents as asked, otherwise, the bid will be

rejected.

- (6) If there are any clarifications, this may be obtained online through the tender site, or through the contact details. Bidder should take into account of the corrigendum published before submitting the bids online.
- (7) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender schedule and they should be in PDF/xls/rar/dwf formats. If there is more than one document, they can be clubbed together.
- (8) Bidder should get ready the EMD as specified in the tender. The original should be posted/couriered/given in person to the Tender Inviting Authority, within the bid submission date & time for the tender.
- (9) The bidder reads the terms & conditions and accepts the same to proceed further to submit the bids.
- (10) The bidder has to submit the tender document online well in advance before the prescribed time to avoid any delay or problem during the submission process.
- (11) After the bid submission, the acknowledgement number, given by the e-tendering system should be printed by the bidder and kept as a record of evidence for online submission of bid for the particular tender.
- (12) The details of the Earnest Money Deposit document submitted physically to the Dept and the scanned copies furnished at the time of bid submission online should be the same otherwise the Tender will be summarily rejected
- (13) The **Tender Inviting Authority (TIA)** will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders.
- (14) The bidder may submit the bid documents either by online mode through the site (<https://mahatenders.gov.in>) as indicated in the tender.
- (15) The tendering system will give a successful bid updating message after uploading all the bid documents submitted & then a bid summary will be shown with the bid no, date & time of submission of the bid with all other relevant details. The documents submitted by the bidders will be digitally signed using the e-token of the bidder and then submitted.
- (16) The bid summary has to be printed and kept as an acknowledgement as a token of the submission of the bid. The bid summary will act as a proof of bid submission for a tender floated and will also act as an entry point to participate in the bid opening date.
- (17) Bidder should log into the site well in advance for bid submission so that he submits the bid in time i.e. on or before the bid submission end time. If there is any delay, due to other issues, bidder only is responsible.
- (18) The bidder should see that the bid documents submitted should be free from virus and if the documents could not be opened, due to virus, during tender opening, the

bid is liable to be rejected.

- (19) The time settings fixed in the server side & displayed at the top of the tender site, will be valid for all actions of requesting, bid submission, bid opening etc., in the e-tender system. The bidders should follow this time during bid submission.
- (20) All the data being entered by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered will not be viewable by unauthorized persons during bid submission & not be viewable by any one until the time of bid opening. Overall, the submitted tender documents become readable only after the tender opening by the authorized individual.
- (21) The confidentiality of the bids is maintained since the secured Socket Layer 128 bit encryption technology is used. Data storage encryption of sensitive fields is done.
- (22) The bidders are requested to submit the bids through online etendering system to the TIA well before the bid submission end date & time (**as per Server System Clock**).
- (23) The bidder should logout of the tendering system using the normal logout option available at the top right hand corner and not by selecting the (X) option in the browser.
- (24) The bidder should upload the Technical document in .rar format single file to upload in Technical cover and then BOQ in .xls format single file to upload in Finance cover.
- (25) For any other queries, the bidders are asked to contact through Mail : **etender.maha@nic.in**

## **SECTION 1 – INSTRUCTIONS TO BIDDERS (ITB)**

### **Section – 1 : Instructions to Bidders**

#### **A. GENERAL**

#### **1. Scope of Bid**

- 1.1 The Employer (named in Appendix to ITB) on pages No.24 invites online bids for the constructions of works (as defined in these documents and referred to as “the works”) detailed in the table given in IFB. The bidders may submit bids for any or all of the works detailed in the table given in IFB.
- 1.2 The successful bidder will be expected to complete the works by the intended completion date specified in the Contract data.
- 1.3 Throughout these bidding documents, the terms ‘bid’ and ‘tender’ and their derivatives (bidder/tenderer, bid/tender, bidding/tendering etc.) are synonymous.

#### **2. Sources of Funds**

3. The expenditure on this project will be met from the budget of "**Maharashtra Maritime Board, 1A**"

#### **4. Eligible Bidders**

- 4.1 This invitation for Bids is open to all bidders.
- 4.2 All bidders shall provide in Tender part-2 Section 2, page No.10 Forms of Bid and Qualification Information, a statement that the Bidder is neither associated, nor has been associated, directly or indirectly, with the Consultant or any other entity that has prepared the design, specification, and other documents for the Project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Employer to provide consulting services for the preparation of supervision of the works, and any of its affiliates, shall not be eligible to bid.

#### **5. Qualification of the Bidder**

- 5.1 All bidders shall provide in Section 2, Forms of Bid and Qualification Information, ~~a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary. The proposed methodology should include~~ programme of construction backed with equipment planning and deployment duly supported with broad calculations and quality assurance procedures proposed to be adopted justifying their capability of execution and completion of work as per technical specifications, within stipulated period of completion.

#### **5.2 Deleted**

- 5.3 If the Employer has not undertaken prequalification of potential bidders, all bidders shall include the following information and documents with their bids in Section 2.
- (a) Copies of original documents defining the constitution or legal status, place of registration and principal place of business, written power of attorney of the signatory of the Bid to commit the Bidder ;
  - (b) Total monetary value of construction work performed for each of the last five years ;
  - (c) Experience in works of a similar nature and size for each of the last five years and details of works underway or contractually committed and clients who may be contacted for further information on those contracts ;
  - (d) Major items of construction equipment proposed to carry out the Contract.
  - (e) Qualifications and experience of key site management and technical personnel proposed for contract ;



- (f) Reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the past five years ;
- (g) Evidence of access to line(s) of credit and availability of other financial resources facilities (10% of contract value) certified by the Bankers. (Not more than 3 months old);
- (h) Undertaking that the bidder will be able to invest a minimum cash up to 25% of contract value of work during implementation of work ;
- (i) Authority to seek references from the Bidder's bankers ;
- (j) Information regarding any litigation, current or during the last five years, in the Bidder is involved, the parties concerned and disputed amount ;

## 4.5 QUALIFICATION CRITERIA

4.5.1 Qualification will be based on Applicant's meeting all the following minimum pass/fail criteria regarding the Applicant's general and particular experience, personnel and equipment capabilities, and financial position, as demonstrated by the Applicant's response in the forms attached to the Letter of Application. Subcontractor's experience and resources shall not be taken into account in determining the Applicant's compliance with the qualifying criteria.

To qualify for more than one contract, the applicant must demonstrate having experience and resources sufficient to meet the aggregate of the qualifying criteria for each contract given in the paragraphs 4.5.4, 4.5.5, 4.5.6 and 4.5.9 below.

4.5.2 **Base year and escalation:** -The base shall be taken as **2017-18**

Following enhancement factors will be used for the cost of works executed and the financial figures to a common base value for works completed in India.

Year before	Multiplying factor
One	1.10
Two	1.21
Three	1.33
Four	1.46
Five	1.61

Applicant should indicate actual figures of costs and amount for the works executed by them without accounting for the above mentioned factors.

In case the financial figures and value of completed works are in foreign currency, the above enhanced multiplying factors will not be applied. Instead, current market exchange rate (State Bank of India BC selling rate as on the last date of submission of bid) will be applied for the purpose of conversion amount in foreign currency in Indian rupees.

### 4.5.3 General Experience

**The applicant shall meet the following minimum criteria**

- (a) To qualify for award of the contract, each tenderer in his name should have achieved an Minimum financial turnover of **Rs. 60,00,00,000.00** during last three years ( FY 2014-15 , 2015-16, 2016-17) at the price level of 2017-2018 information should be given in Performa given This should be duly audited by Chartered Accountant. Year in which no turnover is shown would also be considered for working out the average turnover.
- (b) Satisfactorily completed as a contractor, **at least one similar type of work**, Construction of value **Rs. 43,32,00,000.00** at the price level of 2017-2018.

**-: Definition of Similar works :-**

**Contractor should have constructed a minimum of 2 or more Basements + 12 or more storied buildings with Glass façade and having 20,500 Sq.mtr. area.**

- (c) **The Scan copy of Original copy of Valid GST registration certificate from Goods and Service Tax Act.**
- (d) Satisfactorily executed in any one year, out of last 3 years preceding March 2017 the following minimum quantities of work (Information to be given only in Form No. VI enclosed herewith on *Page-27*).

<b>Sr no</b>	<b>Item</b>	<b>Quantity</b>	<b>Unit</b>
I	Steel Bar (Fe 500)	474.00	Metric Tonne
II	Concrete Block (Auto Clave Cellular)	2850.00	Square Metre
III	RCC Quantity (M-20& Above)	4336.00	Cubic Metre
VI	Facade Glass	620.00	Square Metre
V	Façade Cladding	940.00	Square Metre

The works may have been executed by the Applicants as prime contractor.

Substantially completed works means those works which are at least 90 % completed as on the date of submission (i.e. gross values of work done up to the last date of submission is 90% or more of the original contract price) and continuing satisfactorily.

For these, a certificate from employer shall be submitted along with application incorporating clearly the name of the work, contract value, billing amount, date of commencement of works satisfactory performance of the Contractor and any other relevant information.

**4.5.4 Personal capabilities**

The Applicant must have suitably qualified personal to fill the following positions. The Applicant will supply information on a prime candidate and alternate for each position, both of whom should meet the experience requirements specified below.

**List of Key Personnel to be deployed on Contract Work**

<b>Sr. No.</b>	<b>Personnel</b>	<b>Qualification</b>	<b>No. of Personnel</b>
1.	Project Manger	B.E.Civil+15YearsExp. (5 years as Manager)	1 No.
2.	Site Engineer	B.E.Civil+10YearsExp. (5years in Building Construction )	4 No.
3.	Plant Engineer	B.E.Mech.+10YearsExp.or Dip.Mech+15yearsExp.	1 No.
4.	Quantity Surveyor	B.E.Civil+7yearsExp.or Dip.Civil+10yearsExp.	2 No.
5.	Soil & Material Engineer	B.E.Civil+10yearsExp.	2 No.
6.	Design/Survey Engineer	B.E.Civil+5yearsExp.or Dip.Civil+8yearsExp.	1 No.
7.	Site Supervisor	CEA-3 Years Exp.	4 Nos
8.	Office Assistant	Any Graduate + 3 yrs experience in M.S. Excel, M.S Word, Power point, Marathi Typing	1 No
		<b>Total</b>	<b>16</b>

**4.5.5 Equipment capabilities**

The Applicant should own or should have assured ownership to the following key items of equipment, in full working order, and must demonstrate that, best on known commitments; they will be available for the work in proposed contract.

**List of Key Plant & Equipment to be deployed on Contract Work**  
[Reference CI. 4.5 (B) (a)]

Sr.No.	Equipment	Minimum age as on 31.03.2017 (Year)	Minimum Requirement		
			Owned	Owned / Leased	Total
1	Automatic concrete weigh batching plant with pan mixing arrangements ( Capacity 30 cum/hr )	5	--	1	1
2	Concrete pump min. capacity 30 cum/hr	3	--	1	1
3	Poclaim	5	---	1	1
4	JCB	5	---	2	2
5	Dumper	5	---	10	10
6	Tipper / Truck	5	---	4	4
7	Water Pump 5 to 9 HP	5	---	4	4
8	Water Pump 10 to 19 HP	5	---	4	4
9	Transit Miller	5	---	2	2
10	Crain (For Loading Material etc.)	5	---	1	1
11	Needle Vibrator	6	---	6	6
12	Place Vibrator	5	---	4	4
13	Shuttering / Props / Centering Material	5	---	6000.00 Sqm	6000.00 Sqm
14	Water Tanker	5	---	2	2
15	Concrete Weight Batching		---	2	2

Note:-

1. The tenderer shall submit commercial invoices & vehicle particulars by concern RTO in support of Plant and Machinery mentioned in clause 2.4
2. Definite proof of owning of above machineries in the form of commercial invoice shall be treated as ownership.

#### 4.5.6 Financial Position

The Applicant should demonstrate that he has access to, or has available, liquid assets (aggregate of working capital, cash in hand and uncommitted bank guarantees) and /or credit facilities of not less than 10 percent of the value of the contract/contracts applied for (construction cash-flow may be taken as 10 percent of the estimated value of the contract / contracts)

- 4.5.7 The audited balance sheets for the last five years should be submitted, which must demonstrate the soundness of the Applicant's financial position, showing long-term profitability including an estimated financial projection for the next two years. If necessary, the employer will make enquiries with the applicant's bankers.

#### 4.5.8 **Litigation History**

The Applicant should provide accurate information on any litigation or arbitration resulting from contracts completed or under execution by him over the last five years. A consistence history of awards against the applicant or any partner of a joint venture may result in failure of the applicant.

#### 4.5.9 **Bid Capacity**

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

$$\text{Assessed Available Bid capacity} = (A \times N \times 2 - B),$$

Where,

A = Highest turnover of last five years (updated to the current price level ) rate of inflation may be taken as 10 percentage per year which will taking into account the completed as well as works in progress.

B = Value at current price level of the existing commitments and ongoing works to be completed during the next **12 months**, and

N = Number of years prescribed for completion of the works for which bids are invited.

#### 4.6. **Disqualification**

Even though the applicants meet the above qualifying criteria, they are subject to be disqualified if they have:

- made misleading or false representation in the form, statements submitted; and / or
- Records of poor performance such as abandoning the works, rescinding of contract for which the reasons are attributable to the non-performance of the contractor, consistent history of litigation awarded against the Applicant or financial failure due to bankruptcy.
- The rescinding of contract of a joint venture on account of reasons other than non-performance, such as Most Experienced partner of joint venture pulling out, court directions leading to breaking up to a joint venture before the start of work, which are not attributable to the poor performance of the contractor will, however, not affect the qualification of the individual partners.

#### 4.7 **JOINT VENTURE - DELETED (Not Allowed )**

### 5. **One Bid per Bidder**

5.1 Each bidder shall submit only one online - bid for one package. A bidder who submits or participates in more than one Bid (other than as a sub contractor or on cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.

### 6. **Cost of Bidding**

6.1 The bidder shall bear all costs associated with the preparation and submission of his bid and the Employer will in no case be responsible and liable for those costs.

### 7. **Site Visit**

7.1 The Bidder, at the Bidder's own responsibility and risk is encouraged to visit and examine the Site of Works and its surrounding and obtain all information that may be necessary for preparing the Bid and

entering into a contract for construction of the Works. The cost of visiting the Site shall be at the Bidder's own expense.

## 8. Additional Requirements

8.1 Bidders should provide any additional information required to fulfil the requirements of clause 4 of the Instructions to the Bidders, if applicable.

- (i) Affidavit
- (ii) Undertaking.
- (iii) **Affidavit additional performance security must be enclosed**

## B. BIDDING DOCUMENTS

### 8. Content of Bidding Documents

8.1 The set of bidding documents comprises the documents listed below and addenda issued in accordance with Clause 10.

Section	Particulars	Volume No.
	Invitation for Bids	
1	Instruction to Bidders	I
2	Qualification information and other forms	
3	Conditions of Contract	
4	Contract Data	
5	Technical Specification	II
6	Form of Bid	III
7	Bill of Quantities	
8	Securities and other forms	
9	Drawings	IV
10	Documents to be furnished by bidder	V

8.2 Complete bidding document containing **volumes - I, II, III and IV are available to the bidders on e-tendering portal <https://mahatenders.gov.in>** Documents to be furnished by the bidder in compliance to section 2 will be by him and uploaded online as “ **in “general document ”** (Refer clause 12) .

8.3 The bidder is expected to examine carefully all instructions, conditions of contract, contract data, forms, terms, technical specifications, bill of quantities, forms, Annexes and drawings in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. Pursuant to clause 26 hereof, bids which are not substantially responsive to the requirements of the Bid Documents shall be rejected.

### 9. Clarification of Bidding Documents

9.1 A prospective bidders requiring any clarification of the bidding documents may notify the Employer in writing or by Fax /email at the Employer's address indicated in the invitation to bid before the date and time of the pre-bid meeting specified in the Tender Schedule. The Employer will respond to any request for clarification which he received, earlier than 3 days prior to the Bid due date. Copies of the Employer's response will be uploaded in “edit attachment option” of concern tender on e-tendering portal and viewable to all tenderer, including a description of the enquiry but without identifying its source.

## 9.2 **Pre-bid meeting**

- 9.2.1 The bidder or his official representative is invited to attend a pre-bid meeting which will take place at the address, venue, time and date as indicated in NIT.
- 9.2.2 The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 9.2.3 The bidder is requested to submit any questions in writing by fax or by e-mail to reach the Employer well before the date & time of the pre-bid meeting.
- 9.2.4 Minutes of the meeting, including the text of the questions raised (without identifying the source of enquiry) and the responses given will be transmitted by uploading on e-tender portal without delay for information to all intended bidder. Any modifications of the bidding documents listed in sub clause 8.1 which may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to clause 10 and not through the minutes of the pre-bid meeting.
- 9.2.5 Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

## 10. **Amendment of Biding Documents**

- 10.1 Before the deadline for submission of bids online, the Employer may modify the bidding documents by issuing addenda.
- 10.2 Any addendum thus issued shall be part of the bidding documents and shall be uploaded in “edit attachment option” of concern tender on e-tendering portal and viewable to all tenderer, including a description of the enquiry but without identifying its source. The uploading of addendum on e-tendering portal shall deemed to be acknowledgement of receipt of each addendum to the employer. The Employer will assume no responsibility for non cognizance by the bidders.
- 10.3 To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at his discretion, extend as necessary the deadline for submission of bids, in accordance with Sub-Clause 20.2 below.

## 10.4. **BID REJECTION CRITERIA:**

The bidders are informed about the bid rejection criteria stated as below

### 4.10.1 Following bids shall be categorically rejected;

- 10.4.1.1.** Bids received after the tender closing date and time.
- 10.4.1.2.** Bids received without EMD as specified in the tender
- 10.4.1.3.** Following bid rejection criteria may render the bids liable for rejection with the approval of CEO, MMB.
- 10.4.1.4.** Incomplete / misleading / ambiguous/ conditional bids in the considered opinion of MMB.
- 10.4.1.5.** Bidders not agreeing to furnish required Security Deposit till completion of the contract.
- 10.4.1.6.** Validity Period indicated by the bidder is shorter than as specified in the tender document.
- 10.4.1.7.** Bidders not agreeing to furnish Performance Bank Guarantee till the completion of the contract.
- 10.4.1.8.** Bids not meeting the qualification parameters stipulated in the tender document.
- 10.4.1.9.** Bidders not furnishing additional security deposit in the correct form and amount.



**10.4.2.** Following bid rejection criteria may render the bids liable for Rejection with the approval of the tender committee.

**10.4.2.1.** Bidder's failure to submit sufficient or complete details for evaluation of the bids/within the given period depending on the deficiencies noticed in the drawing / technical data which shall not however conflict with validity period.

**10.4.2.2.** Incomplete / misleading / ambiguous bids in the considered opinion of tender committee

**10.4.2.3.** Bids received without pre-qualification document where required as per the tender.

**10.4.2.4.** Bids not meeting the pre-qualification parameters stipulated in the tender enquiry.

**10.4.2.5.** Wherever PVC is allowed as per Tender but the bidder(s) quoted fixed price or vise – versa

**10.4.2.6.** Extra Items :

Extra item of Works ; if any, shall be determined supported by a rate analysis on the following basis:

- Rates derived from similar items of this contract.

**OR**

- Rates for similar items of work executed through other agencies for MMB recently.

**OR**

- Rates mutually agreed.

## C. PREPARATION OF BIDS

### 11. Language of the Bid

11.1 All documents relating to the bid shall be in the English language.

### 12. Documents Comprising the Bid

12.1 The bid to be submitted by the bidder as Volume V of the bid document (refer Clause 8.1) shall be in two separate parts:

**Part I** shall be named "Technical Bid" and shall comprise

- (i) Bid Security in the form specified in section 8
- (ii) Qualification Information and supporting documents as specified in Sect. 2.
- (iii) Certificates, undertakings, affidavits as specified in Section 2.
- (iv) Any other information pursuant to Claus 4.2 of these instructions.
- (v) Undertaking that the bid shall remain valid for the period specified in Cl 15.1.
- (vi) Acceptance/ non acceptance of Dispute Review Expert proposed in Cl. 36.1.

**Part II** shall be named "Financial Bid" and shall comprise

- (i) Form of Bid a specified in Section 6.
- (ii) Priced Bill of Quantities for items specified in Section 7.

12.2 The bidder shall fill and upload the Technical and Financial bid in 'edit attachment option' and shall upload the supporting document in 'General Document Option' of e tendering portal and submit the bid by using his Class III Digital Signature.

12.3 Following documents, which are not submitted with the bid, will be deemed to be part of the bid.

Section	Particulars	Volume No.
	Invitation for Bids (IFB)	
1	Instruction to Bidders	
3	Conditions of Contract	} Volume I
4	Contract Data	
5	Specifications	} Volume II
6	Drawings	

### 13. Bid Prices.

13.1 The contract shall be for the whole works as described in Sub-Clause 1.1, based on the priced Bill of Quantities submitted by the Bidder.

13.2 The bidder shall fill rates in 'Rate Column of BOQ Sheet' in figures only for all items of the Works described in the Bill of Quantities. Items for which no rate is entered by the bidder will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities. Corrections of any, shall be made by crossing out, initialing, dating and rewriting.

13.3 All duties, taxes and other levies payable by the contractor under the contract, or for any other cause shall be included in the rates, prices and total Bid Price submitted by the Bidder.

13.4 The rates and prices quoted by the bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of Clause 47 of the Conditions of Contract. (For contracts more than **24 month's** period).

#### 14. Currencies of Bid and Payment.

The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees. All payments shall be made in Indian Rupees.

- **The Rates of Items in schedule "B" / (BOQ) on part II of NIT are including of Taxes, Rates, Cesses and also inclusive of the livable tax in respect of sale by transfer of property in goods involved in the execution of works Contract under the provision of rule 58 of the Maharashtra Value Added Tax Act 2005 for the purpose of levy of**
- **The rates quoted by the Contractor shall be rates excluding sales Tax and all other taxes but shall include GST that the contractor will have to pay for the performance of this Contract.**
- **GST as per Govt. of Maharashtra Finance Department, Marathi Circular No. GST-2017/ प्र. क्र. ८१ / कराधान-१ Mantralaya, Mumbai-32, Dated. 19.08.2017.**
- **Provisional amount of GST @2% i.e.1% C.G.S.T. + 1% S.G.S.T. will be deducted at Source (TDS) after the enforcement of Sections 51 of Maharashtra Goods and Services Act. 2017.**

#### 15. Bid Validity.

15.1 Bids shall remain valid for a period not less than **120 days** after the deadline date for bid submission specified in Clause 20. A bid valid for a shorter period shall be rejected by the Employer as non-responsive. In case of discrepancy in bid validity period between that given in the undertaking pursuant to Clause 12.1 (v) and the Form of Bid submitted by the bidder, the latter shall be deemed to stand corrected in accordance with the former and the bidder has to provide for any additional security that is required.

15.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidder's responses shall be made in writing or by cable. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid except as provided in 15.3 hereinafter, but will be required to extend the validity of his bid security for a period of the extension, and in compliance with Clause 16 in all respects.

15.3 \* In the case of contracts in which the Contract Price is fixed (not subject to price adjustment), in the event that the Employer requests and the Bidder agrees to an extension of the validity period, the contract price, if the bidder is selected for award shall be the bid price corrected as follows:

The price shall be increased by the factor of 0.2% for each week or part of a week that has elapsed from the expiration of the initial bid validity to the date of issue of letter of acceptance to the successful Bidder.

\* DELETED

15.4 **Bid evaluation will be based on the bid prices without taking into consideration the above correction.**

### 15.5 Hard copy submitting by contractor.

**Tenderer must submit the Hard Copy of online submitted copy of the Concerned Executive Engineer's Office(as specified below)**

- a) Documents submitted on time in Envelope No. 1 & 2 are put in separate Envelope as Envelope No.1 (Technical Bid) and Envelope No.2 (Financial Bid) respectively and sealed properly.
- b) The above two sealed Envelopes No.1 and 2 shall be again put together in one common cover and sealed. The name of work, online Tender Number, Name and full address of Tenderer with Mobile Number shall be mentioned on the said common cover marked sealed. Common cover properly covers corner.
- c) The above Common Cover containing Envelope No. 1 & 2 must be submit to the Concerned Executive Engineer, Maharashtra Maritime Board, Mumbai. Within 03 working days start form next day of after Closing of Bid Submission Date (During Office Hours) Only.
- d) No Delay on account of any cause will be entertained for the receipt said Hard Copy.
- e) If Tenderer Fails or neglect to Submit Hard Copy His On-Line offer (Tender) will be Not be considered for further tendering procedure.

### 16. Bid Security

- 16.1 Earnest money of minimum Rs. **22,92,000/-** shall be paid via online payment gateway mode. After Tender opening, the EMD of the unsuccessful bidder will be returned to account provided by the bidder during the bid preparation as given in challan under Beneficiary Account Number.
- 16.2 Earnest Money in the form of cheques or any other form except above will not be accepted.
- 16.3 The amount will be refunded to the unsuccessful tenderers on deciding about the acceptance or otherwise of the tender. In case of successful tenderer, it will be refunded on his paying initial Security Deposit and completing the tender documents in form B-2.
- 16.4 Joint Venture Not Allowed .
- 16.5 The Bid Security of the successful bidder will be discharged when the bidder has signed the Agreement and furnished the required Performance Security.

### 16.6 The bid Security may be forfeited.

I/We agree that the offer shall remain open for acceptance for a minimum period of **120 days** from the date fixed for opening of envelope No. 2 (Financial Bid) and thereafter until it is withdrawn by me/ us by notice in writing duly addressed to the authority opening the tenders and sent by registered post A.D. or otherwise delivered at the office of such authority. of the sum of **Rs. 22,92,000/-** representing the earnest money is herewith forwarded. The amount of earnest money shall not bear interest and shall be liable to be forfeited to the Government, should I/We fail to (I) abide by the stipulation to keep the offer open for the period mentioned above or (II) Sign and complete the contract documents as required by the Engineer and furnish the security deposit as specified in item (d) of the memorandum contained in paragraph (1) above within the time limit laid down in clause (1) of the annexed General Conditions of contract. The amount of earnest money may be adjusted towards the security deposit or refunded to me/us if so, desired by me/ us in writing, unless the same or any part thereof has been forfeited as aforesaid.

- 16.7 I/We have secured exemption from payment of earnest money after executing the necessary bond in favour of the Government, a true copy of which is enclosed herewith. Should any occasion for forfeiture of earnest money for this work arise due to failure on my/our part to (I) abide by the

stipulations to keep the offer open for the period mentioned above or (ii) sign and complete the contract documents and furnish the security deposit as specified in item (d) of the Memorandum contained in paragraph (1) above within the time limit laid down in clause (1) of the annexed General Conditions of Contract, the amount payable by me/us may, at the option of the Engineer, be recovered out of the amount deposited in lump sum for securing exemption in so far as the same may extend in terms of the said bond and in the event of the deficiency out of any other payments which are due or payable to me/us by the Government under any other contract or transaction of any nature whatsoever or otherwise.

## **17. Alternative Proposals by Bidders**

- 17.1 Bidders shall submit offers that fully comply with the requirements of the bidding documents, including the conditions of contract (including mobilization advance or time for completion), basic technical design as indicated in the drawing and specifications. Conditional offer or alternative offers will not be considered further in the process of tender evaluation.

## **18. Format and Signing of Bid**

- 18.1 The bidder shall be required to fill and upload the Technical and Financial Bid by using his Class III Digital Signature of the person who is authorised to submit the Bid, uploaded
- 18.2 The documents are required to be uploaded in “Edit Attachment Option” online. The bidder is required to ensure that the size of each document does not exceed 5 MB.
- 18.3 In case Bidder would like to provide any Supporting Document(s) as a part of the Bid Response, the Bidder may upload such Supporting Document(s) under “General Document Option” of tender.

## **18.4 CASHLESS**

Vide GR No. Govt. Of Maharashtra , Public Works Department. Mantralaya Nagpur No. Tender 2016/CN20/shikana/Bldg -2 dated 09/12/2016 Contractor shall submit a certificate to the effect that all the payments to the labour / staff are made in bank accounts of staff should linked to Unique Identification Number ( AADHAR Card) . The certification shall be submitted by the contractor within 60 days from the commencement of the contract. If the time period of contract is less than 60 days than such certificate shall be submitted within 15 days from the date of commencement of contract.

## **D. SUBMISSION OF BIDS**

### **19. Submission of Bids**

- 19.1 The Bidder shall refer to the "**Bidder Manual Kit**" for Preparation and Submission of bid on 'https://mahatender.gov.in' portal.

### **20. Deadline for Submission of the Bids**

- 20.1 The complete Bids (including Technical and Financial) must be received on e-tendering portal not later than the date indicated in NIT.
- 20.2 The Employer may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

### **21. Late Bids**

- 21.1 Any bid submitting the Bid Security and Cost of Tender Fee document in Original after deadline prescribed in NIT will not be accepted and returned. The bid (including technical and financial) will not be opened. The complete Bids (including Technical and Financial) must be received by the Employer online not later than the deadline indicated in the schedule.

### **22. Modification and Withdrawal of Bids**

- 22.1 The bidder may modify or cancel their bid online only before the deadline prescribed in clause 20 i.e..Bid due date.

## **E. BID OPENING AND EVALUATION**

### **23. Bid Opening**

- 23.1 The Employer will open all the Technical Bids received of those tenderer who has submitted the Bid Security and Cost of Tender Fee document through online before the deadline prescribed in Tender Schedule, in the presence of the Bidders or their representatives who choose to attend at time, date and the place specified in Appendix in the manner specified in Clause 20 and 23.2. In the event of the specified date of Bid opening being declared a holiday for the Employer, the Bids will be opened at the appointed time and location on the next working day.
- 23.2 The Online "Technical Bid" shall be opened first. The Bid Security and Cost of Tender Fee documents uploaded online shall be verified with Original documents submitted by bidders as required as per NIT. The amount, form and validity of the bid security furnished with each bid will be announced. If the bid security furnished does not conform to the amount and validity period as specified in the Invitation for Bid (ref. Column 5 and paragraph 3), and has not been furnished in the form specified in Clause 16, the remaining technical bid online will not be opened .
- 23.3
- (i) Subject to confirmation of the bid security by the issuing Bank, the bids accompanied with valid bid security will be taken up for evaluation with respect to the Qualification Information and other information furnished in Part I of the bid pursuant to Clause 12.1.
  - (ii) After receipt of confirmation of the bid security, the bidder will be asked in writing/ online (usually within 10 days of opening of the Technical Bid) to clarify or modify his technical bid, if necessary, with respect to any rectifiable defects.
  - (iii) The bidders will respond in not more than 7 days of issue of the clarification letter/online communication, which will also indicate the date, time and venue of opening of the financial Bid. (usually on the 21<sup>st</sup> day of opening of the Technical Bid)
  - (iv) Immediately (usually within 3 or 4 days) on receipt of these clarifications the Evaluation Committee will finalize the list of responsive bidders whose financial bids are eligible for consideration.
- 23.4 At the time of Online opening of "Financial Bid", the names of the bidders who were found responsive in accordance with Clause 23.3 (iv) will be announced. The bids of only these bidders will be opened. The remaining bids will be rejected online. The e-tendering system shall communicate to the rejected bidders along with reasons for their rejection. The responsive Bidder's names, the Bid prices, the total amount of each bid, will be announced by the Employer at the opening.
- 23.5 In case bids are invited in more than one package, the order for opening of the "Financial Bid" shall be that in which they appear in the "Invitation For Bid".
- 23.6 The Employer shall prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Sub-Clause 23.4. result of financial bids of all the Bidders shall be made available e-tendering portal in option " tender free View"

### **24. Process to be Confidential**

- 24.1 Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contractor shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to influence the Employer's processing of Bids or award decisions may result in the rejection of his Bid.

## **25. Clarification of Financial Bids**

- 25.1 To assist in the examination, evaluation and comparison of Bids, the Employer may, at his discretion, ask any Bidder for clarification of his bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing but no change in the price or substance of the Bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids in accordance with Clause 27
- 25.2 Subject to sub-clause 25.1, no Bidder shall contact the Employer on any matter relating to his bid from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Employer, it should do so in writing/online.
- 25.3 Any effort by the Bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidder's bid.

## **26. Examination of Bids and determination of Responsiveness**

- 26.1 During the detailed evaluation of "Technical Bids" the Employer will determine whether each Bid (a) meets the eligibility criteria defined in clause 3 and 4. (b) has been properly signed, (c) is accompanied by the required securities and, (d) is substantially responsive to the requirements of the Bidding documents. During the detailed evaluation of the "Financial Bid", the responsiveness of the bids will be further determined with respect to the remaining bid conditions, i.e. priced bill of quantities, technical specifications and drawings.
- 26.2 A substantially responsive "Financial Bid" is one, which conforms to all the terms, conditions and specifications of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works, (b) which limits in any substantial way, inconsistent, with the Bidding documents, the Employer's rights or the Bidder's obligations under the Contract, or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.
- 26.3 If a "Financial Bid" is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

## **27. Correction of Errors**

- 27.1 "Financial Bids" determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows :
- (a) where there is a discrepancy between the rates in figures and in words, the rate in words will govern ; and
  - (b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.
- 27.2 The amount stated in the "Financial Bid" will be corrected by the Employer in accordance with the above procedure and the bid amount adjusted with the concurrence of the Bidder in the following manner :
- (a) If the Bid price increases as a result of these corrections, the amount as stated in the bid will be the 'bid price' and the increase will be treated as rebate;
  - (b) If the bid price decreases as a result of the corrections, the decreased amount will be treated as the 'bid price'.

Such adjusted bid price shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount the Bid will be rejected and the Bid Security may be forfeited in accordance with Sub-Clause 16.6(b).

## **28. Deleted**



**29. Evaluation and Comparison of Financial Bids**

- 29.1 The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Sub-Clause 26.2.
- 29.2 In evaluating the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid Price as follows:
- a) Making any correction for errors pursuant to Clause 27; or
  - (b) Making an appropriate adjustments for any other acceptable variations, deviations; and
  - (c) Making appropriate adjustments to reflect discounts or other price modifications offered in accordance with Sub-Clause 23.6.
- 29.3 The Employer reserves the right to accept or reject any variation or deviation. Variations and deviations and other factors, which are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for the Employer shall not be taken into account in Bid evaluation.
- 29.4 The estimated effect of the price adjustment conditions under Clause 47 of the Conditions of contract, during the period of implementation of the Contract, will not be taken into account in Bid evaluation.
- 29.5 If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineers estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analysis, the Employer may require that the amount of the performance security set forth in Clause 34 be increased at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.
- 29.6 A bid which contains several items in the Bill of Quantities which are unrealistically priced low and which cannot be substantiated satisfactorily by the bidder, may be rejected as non-responsive.

**30. Deleted.**

## **F. AWARD OF CONTRACT**

### **31. Award Criteria**

31.1 Subject to Clause 32, the Employer will award the Contract to the Bidder whose Bid has been determined.

(i) To be substantially responsive to the Bidding documents and who has offered the lowest evaluated Bid price and

(ii) To be within the available bid capacity adjusted to account for his bid price which is evaluated the lowest in any of the packages opened earlier than the one under consideration.

In no case the contract shall be awarded to any bidder whose available bid capacity is less than the evaluated bid price, even if the said bid is the lowest evaluated bid. The contract will in such cases be awarded to the next lowest bidder at his evaluated bid price.

### **32. Employers Right to accept any Bid and to reject any or all Bids.**

32.1 Notwithstanding Clause 31, the Employer reserves the right to accept or reject any bid, and to cancel the Bidding process and reject all Bids, at any time prior to the award of contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

### **33. Notification of Award and Signing of Agreement**

33.1 The Bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by cable, telex or facsimile confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price")

33.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of a performance security in accordance with the provisions of Clause 34.

33.3 The Agreement will incorporate all agreements between the Employer and the successful Bidder. It will be signed by the Employer and sent to the successful Bidder, within 28 days following the notification of award along with the Letter of Acceptance. Within 21 days of receipt, the successful Bidder will sign the Agreement and deliver it to the Employer.

33.4 Upon the furnishing by the successful Bidder of the Performance Security, the Employer will promptly notify the other Bidders that their Bids have been unsuccessful.

### **34. Performance Security and Additional Performance Security :**

#### **Performance Security/ EMD**

(i) If the tenderer has quoted the offer below the estimated cost put to tender, the tenderer shall have to submit Additional Performance Security in the form of D.D. / F.D.R. / Bank Guarantee of any Nationalised or Scheduled Bank in favour of the Chief Executive Officer, Maharashtra Maritime Board, Mumbai, payable at Mumbai.

The scanned copy of the Demand Draft (Additional Performance Security) shall be uploaded and submitted in envelop no.2 through e-tendering process. It is mandatory to each tenderer that he shall submit sealed envelope bearing name of agency, name of work and

tender notice number which contains the original D.D. / F.D.R. / Bank Guarantee (for which the photocopy has been submitted online as above) or Slip mentioning “Not Applicable” (If offer is not below the estimate cost). The envelope shall be submitted to office of the Executive Engineer within 5 working days from the last date prescribed for the receipt of tender. Also a self attested affidavit that additional performance security is enclosed in envelope No.1 (Technical envelope) If the additional performance security is not found including in Envelope No.2 ( Financial Envelope). The offer shall be treated as non responsive.

(ii)The person/persons whose tender may be accepted (hereinafter called the Contractor, which expression shall unless excluded by or repugnant to the context include his heirs, executors, administrators, and assigns ) shall (A) within 10 days (which may be extended by Superintending Engineer concerned up to 15 days if Superintending Engineer thinks fit to do so) of the receipt by him of the notification of the acceptance of his tender deposit with the Executive Engineer in cash or Government securities endorsed to the Executive Engineer (if deposited for more than 12 months) of the sum sufficient which will made up the full security deposit specified in the tender or (B) (Permit Government at the time of making any payment to him for work done under the contract to deduct such as will amount to \* **FOUR** percent of all moneys so payable such deductions to be held by Government by way of security deposit. ) Provided always that in the event of the Contractor depositing a lump sum by way of security deposit as contemplated at above, then and in such case, if the sum so deposited shall not amount to **FOUR** percent of the total estimated cost of the work, it shall be lawful for Government at the time of making any payment to the Contractor for work done under the contract to make up the full amount of **FOUR** percent by deducting sufficient sum from every such payment as last aforesaid until the full amount of the security deposit is made up. All compensation or other sums of money payable by the Contractor to Government under the terms of his contract may be deducted from or paid by the sale of sufficient part of his security deposit or from the interest arising there form , or from any sums which may be due or may become due by Government to the Contractor under any other contract or transaction of any nature on any account whatsoever and in the

event of his security deposit being reduced by reason of any such deduction or sale as aforesaid, the Contractor shall within ten days thereafter, make good in cash or Government securities endorsed as aforesaid any sum or sums which may have been deducted from, or raised by sale of his security deposit or any part thereof. The security deposit referred to, when paid in cash may, at the cost of the depositor, be converted into interest bearing securities provided that the depositor has expressly desired this in writing.

The security deposit will not be accepted in forms of insurance company bonds as per Government orders contained in No. CCM/PWD/4250 DATED 27/12/1956.

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Note: This will be the same percentage as that in the tender

If the amount of the security deposit be paid in a lump sum within the period specified at (A) above is not paid the tender/contract already accepted shall be considered as cancelled and legal steps taken against the Contractor for recovery of the amounts. The amount of the security deposit lodged by a Contractor shall be refunded along with the payment of the final bill, if the date up to which the Contractor has agreed to maintain the work in good order is over. If such date is not over, only 50% amount of security deposit shall be refunded along with the payment of the final bill. The amount of security deposit retained by the Government shall be released after expiry of period up to which the Contractor has agreed to maintain the work in good order is over. In the event of the Contractor failing or neglecting to complete rectification work within the period up to which the Contractor has agreed to maintain the work in good order, then the amount of Security Deposit retained by Government shall be adjusted towards the excess cost incurred by the Department on rectification work.

#### **Additional Performance Security**

If the tenderer has quoted the offer below the estimated cost put to tender, the tenderer shall have to submit Additional Performance Security in the form of Demand Draft (DD) of any Nationalised or Scheduled Bank in favour of the **Chief Executive Officer, Maharashtra Maritime Board**, payable at Mumbai.

The scanned copy of the Demand Draft (DD) (Additional Performance Security) shall be uploaded and submitted in envelop no.2 through e-tendering process. (Page No.148) It is mandatory to each tenderer that he shall submit sealed envelope bearing name of agency, name of work and tender notice number which contains the original

Demand Draft (DD) (for which the photocopy has been submitted online as above) or Slip mentioning “Not Applicable” (If offer is not below the estimate cost). The envelope shall be submitted to office of the Chief Executive Officer within 5 working days from the last date prescribed for the receipt of tender.

The amount of the (Additional Performance Security) Demand Draft (DD) shall be calculated by the tenderer in accordance with the following manner.

**If the Tenderer is below the Scheduled cost more than 1% it is mandatory to upload online, the Scanned Copy of Original D.D. /B.G. in the name of The Chief Executive Officer, Maharashtra Maritime Board, drawn on Nationalized /Scheduled Bank. D.D. should be valid for 3 months from the date of submission of the tender in ENVELOPE NO.2 against the Additional Performance Security Deposited. The Amount of D.D. /B.G. shall be as per G.R.No.बीडीजी२०१६/प्र.क्र.२/इमा- २,दिनांक१२.०२.२०१६ & Govt. Corrigendum No सीएटी /२०१७ /प्र. ०८ /इमा.-२, दि. २९/०६/२०१७ reproduced on page No. 75-77 & Amendment Dt.17.03.2016. The Original D.D. /B.G. along with the hard copy of the tender shall be submitted in the office of the Executive Engineer within 72 Hrs. from time of bid lock of the tender. The details of performance security deposit for below tender are given in Clause No.1.5 & 1.9.B on page No. 12, 13 & 14 of this D.T.P.**

**3.4.1** If the tenderer has quoted below the estimated rates, the Additional Performance Security shall be paid additionally as mentioned below.

If the offer submitted is below schedule “B” rates by more than 1% but less than 10% of the estimated cost put to tender	1% of the estimated cost put to tender
If below by more than 10% of the estimated cost put to tender	1% of the estimated cost put to tender plus an amount equal to the percentage by which the offer is below 10% of the estimated cost put to tender. (e.g. if the offer is 15.31% below, the Performance Security will be $1\% + (15.31 - 10) = 6.31\%$ of the estimated cost put to tender.

**3.4.2** The Demand Draft (DD) shall be valid upto 3 months from the date of submission of the tender.

**3.4.3** After opening the envelope no.1, if it is found that the tenderer is not qualified for opening his envelope no.2, then his Demand Draft (DD) shall be returned within 7 working days. Also after opening envelope no.2, except the Demand Draft (DD). of 1<sup>st</sup> and 2<sup>nd</sup> lowest bidders, the Demand Draft (DD). of other bidders shall be returned within 7 working days.

**3.4.4** Demand Draft (DD) of the 2<sup>nd</sup> lowest bidder shall be returned within 3 working days after issue of work order to the 1<sup>st</sup> lowest bidder.

**3.4.5** In case it is found that the documents/ Demand Draft (DD) submitted by the tenderer are false or misleading, his earnest money shall be forfeited. Also the registration of the tenderer shall be suspended for the period of 1 year. Additionally legal action may be initiated against the tenderer.

**3.4.6** The work order shall be given to the concerned tenderer after the clearance of the Demand Draft (DD) submitted by him.

**Refund of Additional Performance Security.**

**3.4.7** The amount of the Additional performance security shall be refunded as per the G.R.No. Government of Maharashtra, Public Works Department, Mantralaya, Mumbai No.BDG 2016/C.R.2/Bldg-2, Dated 1/04/2017 (i.e. after Completion of Defect Liability Period).

**3.4.8** Non submission of Additional performance security or submission of less amount of the Additional Performance Security shall be liable to summarily rejection of his tender.

**~~35. Advance Payment and Security~~**

~~35.1 The Employer will provide an Advance Payment on the Contract Price as stipulated in the Conditions of Contract, subject to maximum amount, as stated in the Contract Data.~~

**36. Dispute Review Expert**

**36.1** Except where otherwise specified in the contract and subject to the powers delegated to him by Government under the code, rules then in the force, the decision of the Superintending Engineer of the Circle for the time being shall be final, conclusive and binding on all parties of the contract upon all questions relating to the meaning of the specifications, designs, drawings and instruction hereinbefore mentioned and as to the quality of workmanship or materials used on the work, or as to any other question, claim right, matter or things whatsoever, if any way arising out of, or relating to the contract, designs, drawings, specifications, estimates, instructions, orders, or other conditions, or otherwise concerning the works, or the execution, or failure to execute the same, whether arising during the progress of the work, or after the completion or abandonment thereof.

**36.2** The Contractor may within thirty days of receipt by him of any order passed by the Superintending Engineer of the Circle as aforesaid appeal against it to the Chief Engineer, concerned with the contract work or project provided that -

- (a) The accepted value of the contract exceeds Rs. 10 lakhs (Rupees Ten lakhs)
- (b) Amount of claim is not less than Rs. 1.00 Lakh (Rupees One Lakh).

**36.3** If the Contractor is not satisfied with the order passed by the Chief Engineer as aforesaid, the Contractor may, within thirty days of receipt by him of any such order appeal against it to the concerned Secretary, Public Works Department/Irrigation Department who, if convinced that Prima-facie the Contractors claim rejected by Superintending Engineer/Chief Engineer is not frivolous and that there is some substance in the claim of the Contractor as

would merit a detailed examination and decision by the Standing Committee, shall put up to the Standing Committee at Government level for suitable decision (Vide PW Circular No. CAT-1086-CR-110/Bldg.2 Dated 7.5.1986).

**37. Corrupt or Fraudulent Practices**

- 37.1 The Employer will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question and will declare the firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract with National Highways Authority of India / State PWDNH and any other agencies, if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for the contractor, or in execution.
- 37.2 Furthermore, Bidders shall be aware of the provision stated in Sub-Clause 23.2 and Sub-Clause 59.2 of the Conditions of Contract.

## APPENDIX TO ITB

		Clause Reference With respect to Section – I.
1.	Name of the Employer is <b>Chief Executive Officer, Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001</b>	[ Cl. 1.1]
2.	The last five years 2017-2018 2016-2017 2015-2016 2014-2015 2013-2014	
3.	The Average annual financial turnover amount is <b>Rs 60,00,00,000.00 during last three years ( FY 2014-15 , 2015-16, 2016-17) at the price level of 2017-2018.</b>	[Cl. 4.5.3(a)]
4.	Value of proposed for <b>Satisfactorily completed as a contractor, at least one similar type of work, Construction of value Rs. 43,22,00,000.00 at the price level of 2017-2018</b>	[Cl. 4.5.3(b)]
5.	<b>Quantity of work are : As per Section 1- Instructions to Bidders, Clause No. 4.5.3 (b) Page No. 11.</b>	
6.	<b>Liquid assets and/or availability of credit facilities is is Rs. _____ (Rupees _____ only)</b>	[Cl.4.5B©]
7.	<b>Price level of financial year 2017-18</b>	[Cl. 4.5]
8.	<b>The Pre-bid meeting at Date.26.03.2018 at 15.00 hrs, Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001.</b>	[Cl. 9.2.1]
9.	The technical bid will be opened (if Possible) online at the Office of the Chief Executive Officer, Maharashtra Maritime Board, Indian Mercantile Chamber, 3 <sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001 <b>on dt 20.04.2018 at 12.00 Hours.</b>	
10.	Address of the Employer <b>Chief Executive Officer, Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001</b>	[Cl. .19.2(a)]
11.	<b>Identification :</b> <b>Bid for -</b> Bid Reference : No. _____ Do not open before 20.04.2018 up to 12.00 hours	[Cl. .19.2(b)]



12.	The bid should be submitted latest by <b>18.04.2018</b> on or before <b>17.00</b> hours.	[Cl. 20.1(a)]												
13.	The Financial bid will be opened after technical scrutiny at place Chief Executive Officer, Maharashtra Maritime Board, Indian Mercantile Chamber, 3 <sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001.	[Cl.23.1]												
14.	The Demand Draft (DD) of any Nationalised or Scheduled Bank in favour of the <b>Chief Executive Officer, Maharashtra Maritime Board.</b>	[Cl.34.1]												
15.	The name of Dispute Review Expert is <b>(to be notified later)</b>	[Cl.36.1]												
16.	Escalation factors (for the cost of works executed and financial figure to a common base value for works completed)  <table border="0" style="margin-left: 40px;"> <thead> <tr> <th style="text-align: left;"><u>Year before</u></th> <th style="text-align: left;"><u>Multiply factor</u></th> </tr> </thead> <tbody> <tr> <td>One</td> <td>1.10</td> </tr> <tr> <td>Two</td> <td>1.21</td> </tr> <tr> <td>Three</td> <td>1.33</td> </tr> <tr> <td>Four</td> <td>1.46</td> </tr> <tr> <td>Five</td> <td>1.61</td> </tr> </tbody> </table>	<u>Year before</u>	<u>Multiply factor</u>	One	1.10	Two	1.21	Three	1.33	Four	1.46	Five	1.61	
<u>Year before</u>	<u>Multiply factor</u>													
One	1.10													
Two	1.21													
Three	1.33													
Four	1.46													
Five	1.61													

## SECTION – 2

### QUALIFICATION INFORMATION

The information to be filled in by the bidder in the following pages will be used for purposes of post qualification as provided for in clause 4 of the Instructions to bidders. This information will not be incorporated in the contract

**1. For Individual Bidders**

1.1 Constitution or legal status of Bidder

**(Attach Copy)**

Place of registration: .....

Principal place of business: .....

Power of attorney of signatory of bid

**(Attach)**

1.2 Total value of civil Engineering

1.3 Construction work performed in the last three years.

2016-2017.....

2015-2016.....

2014-2015.....

(Rupees in Million)

1.3.1 Work performed as prime contractor, work performed in the past as a nominated sub-contractor will also be considered provided the Sub-contract involved execution of all main items of work described in the bid document, provided further that all other qualification criteria are satisfied (in the same name) on works of a similar nature over the last Three years.\*\*

Project Name	Name of the Employer *	Description of work	Contract No.	Value of Contract (Rs. Crore)	Date of Issue of work order	Stipulated period of completion	Actual date of completion *	Remarks explaining reasons for delay & work completed

\* Attach certificate(s) from the Engineer(s)-in-charge.

\*\* Immediately preceding the financial year in which bid are received.

β Attach certificate(s) from Chartered Accountant.

# 1.3.2 Quantities of work executed as prime contractor, be considered provided in the bid document, provided further that other qualification criteria are satisfied (in the same name and style) in the last three years.\*\*

Year	Name of the work	Name of the Employer*	Quantity of work performed (Cum) @ Remarks					Remarks* (indicate Ref.)
			Pile Foundation Concrete	Steel Bar	Concrete Block (Auto Clave Cellular)	Tiles Flooring	RCC Quantity	
2014-15								
2015-16								
2016-17								

1.4 Information on Bid capacity (works for which bids have been submitted and works which are yet to be completed) as on the date of this bid.

**(A) Existing commitments and on-going works :**

Description of work	place & State	Contract No.	Name & Address of employer	Value of Contract (Rs. Cr.)	stipulated period of completion	Value of works* remaining to be completed (Rs. Cr.)	Anticipated date of completion
1	2	3	4	5	6	7	8

\* Attach certificate(s) from the Engineer(s)-in-charge.

@ The item of works for which data is requested should tally with that specified in ITB clause 4.5A(C).

\*\* Immediately preceding the financial year in which bid are received.

# Deleted.

**(B) Works for which bids already submitted:**

Description of work	Place & State	Name and Address of Employer	Estimated value of Works (Rs. Cr.)	Stipulated period of completion	Date when decision is expected	Remark, if any
1	2	3	4	5	6	7

- 1.5 Availability of key items of Contractor's Plant & Equipment essential for carrying out the Works [Ref. Clause 4.4.5]. The Bidder should list all the information requested below. Refer also to Sub-Clause 4.3(d) of the Instructions to Bidders.

Item of Plant & Equipment	Requirement		Availability Proposal			Remark (from whom to be purchased)
	No.	Capacity	Owned	Nos./ Capacity	Age / Condition	

- 1.6 Qualification and experience of key personnel required for administration and execution of the contract [Ref. 4.5.5]. Attach biographical data. Refer also to Sub-Clause 4.3 (e) of instructions to Bidders and Sub Clause 9.1 of the Conditions of Contract.

Position	Name	Qualification	Year of Experience (General)	Year of Experience in the proposed position.
Project Manger				
Site Engineer				
Plant Engineer				
Quantity Surveyor				
Soil & Material Engineer				
Design/Survey Engineer				
Site Supervisor				
Office Assistant				

- 1.8 Financial reports for the last Three years: balance sheets, profit & loss statements, auditor's reports (in case of companies /corporation) etc. List them below and attach copies.
- 1.9 Evidence of access to financial resources to meet the qualification requirements: cash in hand. Lines of credit etc. List them below and attach copies of support documents.
- 1.10 Name, address and telephone, telex and fax numbers of the bidder's bankers who may provide reference if contacted by the Employer.
- 1.11 Information on litigation history in which the bidder is involved.

Other party (ies)	Employer	Cause of Dispute	Amount involved	Remarks showing present status

- 1.12 Statement compliance under the requirements of Sub Clause 3.2of the instructions to Bidders.  
(Name of Consultant engaged for project preparation is \*\* -----  
-----  
-----

## 2 Deleted

## 3 Additional Requirements

- 3.1 Bidders should provide any additional information required to fulfil the requirements of clause 4 of the Instructions to the Bidders, if applicable.
- (iv) Affidavit
  - (v) Undertaking.
  - (vi) **Affidavit additional performance security must be enclosed.**

**AFFIDAVIT**

1. I, the undersigned, do hereby certify that all the statements made in the required attachments are true and correct.
2. The undersigned also hereby certifies that neither our firm M/s. \_\_\_\_\_ have not abandoned any work on Maharashtra Maritime Board / Public Work Department nor any contract awarded to us for such works have not been rescinded, during last five years prior to the date of this bid.
3. The undersigned hereby authorise(s) and request(s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by the Department to verify this statement or regarding my (our) competence and general reputation.
4. The undersigned understand and agrees that further qualifying information may be requested and agrees to furnish any such information at the request of the Department / Project implementing agency.

\_\_\_\_\_(Signed by Authorised Officer of the  
Firm)

\_\_\_\_\_  
Name Title of Officer

\_\_\_\_\_  
Name of Firm

\_\_\_\_\_  
DATE

## UNDERTAKING

I, the undersigned, do hereby undertake that our firm M/s.  
\_\_\_\_\_ would invest minimum cash up to 25 % of the value of  
work during implementation of the Contract.

\_\_\_\_\_  
(Signed by Authorised Officer of the Firm)

\_\_\_\_\_  
Name Title of Officer

\_\_\_\_\_  
Name of Firm

\_\_\_\_\_  
DATE

**SECTION – 3**  
**CONDITIONS OF CONTRACT**

Contractor  
Engineer

No. of corrections

Executive



## CONDITIONS OF CONTRACT

### A.GENERAL

#### 1. Definitions

- 1.1 Terms which are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meanings. Capital initial are used to identify defined terms.

The **Adjudicator** (Synonymous with Dispute Review Expert) is the person appointed jointly by the Contractor to resolve disputes in the first instance, as provided for in clauses 24. The name of the Adjudicator is defined in the Contract Data.

**Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Bid.

**Compensation Events** are those defined in Clause 44 hereunder.

The **Completion Date** is the date of completion of the Works as certified by the Engineer in accordance with Sub Clause 55.1.

The **Contract** is the contract between the Employer and the Contractor to execute, complete and maintain the works. It consists of the documents listed in Clause 2.3 below.

The **Contract Data** defines the documents and other information which comprise the Contract.

The **Contractor** is a person or corporate body whose Bid to carry out the Works has been accepted by the Employer.

The **Contractor's Bid** is the completed Bidding document submitted by the Contractor to the Employer and includes Technical and Financial bids.

The **Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

**Day** are calendar days; **months** are calendar months.

A **Defect** is any part of the Works not completed in accordance with the Contract.

A **Defects Liability Period** is the period named in the Contract Data and calculated from the Completion Date.

The **Employer** is the party who will employ the Contractor to carry out the Works.

The **Engineer** is the person named in the Contract Data (or any other competent person appointed and notified to the contractor to act in replacement of the Engineer) who is responsible for supervising the Contractor, administering the Contract, certifying payments due to the Contractor, issuing the valuing Variations to the Contract, awarding extensions of time and valuing the Compensation Events.

**Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The **Initial Contract Price** is the Contract Price listed in the Employer's Letter of Acceptance.

The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The intended Completion Date may be revised only by the Engineer by issuing an extension of time.

**Materials** are all supplies, including consumables, used by the contractor for incorporation in the Works.

**Plant** is any integral part of the Works which is to have a mechanical, electrical, electronic or chemical or biological function.

The **Site** is the area defined as such in the Contract Data.

**Site Investigation Reports** are those which were included in the Bidding documents and are factual interpretative reports about the surface and sub-surface conditions at the site.

**Specification** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Engineer.

The **Start Date** is given in the Contract Data. It is the date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract which includes work on the Site.

**Temporary Works** are works designed, constructed, installed and removed by the Contractor which are needed for construction or installation of the Works.

A **variation** is an instruction given by the Engineer, which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install and turn over to the Employer, as defined in the Contract Data.

## 2. Interpretation

- 2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Engineer will provide instructions clarifying queries about the Conditions of Contract.
- 2.2 If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion date for the whole of the Works)
- 2.3 The documents forming the Contract shall be interpreted in the following order of priority:
- (1) Agreement
  - (2) Letter of Acceptance, notice to proceed with the works.
  - (3) Contractor's Bid
  - (4) Contract Data
  - (5) Conditions of Contract including Special Conditions of Contract
  - (6) Specifications
  - (7) Drawings
  - (8) Bill of Quantities and
  - (9) Any other document listed in the Contract Data as forming part of Contract.

### **3. Language and Law**

3.1 The language of the Contract and the law governing the Contract are stated in the Contract Data

### **4. Engineer's Decisions**

4.1 Except where otherwise specifically stated, the Engineer will decide contractual matters between the Employer and the Contractor in the role representing the Employer.

### **5. Delegation**

5.1 The Engineer may delegate any of his duties and responsibilities to other people except to the Adjudicator after notifying the Contractor and may cancel any delegation after notifying the Contractor.

### **6. Communications**

6.1 Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of India Contract Act).

### **7. Sub-Contracting - DELETED**

### **8. Other Contractors**

8.1 The Contractor shall co-operate and share the Site with other contractors, public authorities, utilities and the Employer between the dates given in the Schedule of other Contractors. The Contractor shall as referred to in Contract Data; also provide facilities and services for them as described in the Schedule. The employer may modify the schedule of other contractors and shall notify the contractor of any such modification.

### **9. Personnel**

9.1 The Contractor shall employ the key personnel named in the Schedule of Key Personnel as referred to in the Contract Data to carry out the functions stated in the Schedule or other personnel approved by the Engineer. The Engineer will approve any proposed replacement of key personnel only if their qualifications, abilities and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.

9.2 If the Engineer asks the Contractor to remove a person who is a member of the Contractor's staff or his work force stating the reasons the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

### **10. Employer's and Contractor's Risks**

10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks, which this Contract states are Contractor's risks.

### **11. Employer's Risks**

11.1 The Employer is responsible for the excepted risks which are (a) in so far as they directly affect the execution of the Works in India, the risks of war, hostilities, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot commotion or disorder (unless restricted to the Contractor's employees), and contamination from any nuclear

fuel or nuclear waste or radioactive toxic explosive, or(b) a cause due solely to the design of the Works, other than the Contractor's design.

## 12. Contractor's Risks

12.1 All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.

## 13. Insurance

13.1 The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractor's risks.

- (a) Loss of or damage to the Works. Plant and Materials:
- (b) Loss of or damage to Equipment:
- (c) Loss of or damage of property (except the Works, Plant, Materials and Equipment) in connection with the Contract; and
- (d) Personal injury or death.

13.2 (Contractor shall take out necessary Insurance Policy / Policies (viz. Contractors' All Risks Insurance Policy, Erection All Risks Insurance Policy etc. as decided by the Directorate of Insurance) so as to provide adequate insurance cover for execution of the awarded contract work for total contract value and complete contract period compulsorily from the "Directorate of Insurance, Maharashtra State, Mumbai" only, Its postal address for correspondence is "264, MHADA, First floor, Opp. Kalanagar, Bandra (E), Mumbai-400051". (Telephone Number 26590403 / 26590690 and Fax Number 26592461 / 26590403). Similarly all workmen's appointed to complete the contract work are required to insure under workmen's compensation Insurance Policy, Insurance Policy / Policies taken out from any Insurance Company, the same will not be accepted and the amount of premium calculated by the Government Insurance Fund will be recovered directly from the amount payable to the contractor for the executed contract work and paid to the Directorate of Insurance Fund, Maharashtra State, Mumbai. The Director of Insurance reserves the right to distribute the risks of insurance among the other insurers. (As per revised circulate issued by Dy. Directorate of Insurance Maharashtra State vide letter No. प्राविनि-२३१०/सा.बां.वि/विमा.वसुली/अभि-३/ dated 8.9.2010 below mentioned percentage for insurance of contract work shall be added in the recapitulation sheet while framing the estimate as it is not considered in the D.S.R. while arriving at rates and the amount incurred by contractors for insurance of work shall be reimbursed on production of documentary evidence and after checking  
a) Work value upto Rs. 25.00 lakhs - 0.50% b) Work value above Rs. 25.00 lakhs = 1.00%.)

13.3 Policies and certificates for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

13.4 If the Contractor does not provide any of the policies and certificates required, the Employer may affect the insurance which the Contractor should have provided and recover the premiums the

Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

13.5 Alterations to the terms of insurance shall not be made without the approval of the Engineer.

13.6 Both parties shall comply with any conditions of the insurance policies.

### 13.7 CESS ON BUILDING & CONSTRUCTION LABOUR WELFARE

An amount of equal to one percent on amount of tendered amount shall be deducted from the payment of contractor as a cess on building & construction labour welfare. The deducted amount shall be remitted in to account number 00422010000153 in the Bank of India of Chairman, Maharashtra Building & Other construction labour welfare circle, Mumbai.

### 14. Site Investigation reports

14.1 The contractor, in preparing the Bid, shall rely on any Site Investigation Reports referred to in the Contract Data, supplemented by any information available to the Bidder.

### 15. Queries about the Contract Data

15.1 The Engineer will clarify queries on the Contract Data.

### 16. Contractor to Construct the Works

16.1 The Contractor shall construct and install the Works in accordance with the Specification and Drawings.

### 17. The Works to be completed by the Intended Completion Date

17.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the programme submitted by the contractor, as updated with the approval of the Engineer, and complete them by the Intended Completion Date.

### 18. Approval by the Engineer

18.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Engineer, who is to approve them if they comply with the Specifications and Drawings.

18.2 The Contractor shall be responsible for design of Temporary Works.

18.3 The Engineer's approval shall not alter the Contractor's responsibility for design of the Temporary Works.

18.3 The Contractor shall obtain approval of third parties to the design of the Temporary Works where required.

18.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Engineer before their use.

### 19. Safety

19.1 The Contractor shall be responsible for the safety of all activities on the Site.

### 20. Discoveries

- 20.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site is the property of the Employer. The Contractor is to notify the Engineer of such discoveries and carry out the Engineer's instructions for dealing with them.

**21. Possession of the Site**

- 21.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Contract Data the Employer is deemed to have delayed the start of the relevant activities.

**22. Access to the Site**

- 22.1 The Contractor shall allow the Engineer and any person authorized by the Engineer access to the Site, to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured/fabricated/assembled for the works.

**23. Instructions**

- 23.1 The contractor shall carry out all instructions of the Engineer pertaining to works which comply with the applicable laws where the Site is located.
- 23.2 The Contractor shall permit the Employer to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the Employer, if so required by the Employer.

**24. Disputes**

DELETED

**25. Procedure for Disputes**

**DELETED**

**26. Replacement of Dispute Review Expert**

**DELETED**

## **B. TIME CONTROL**

### **27. Programme**

- 27.1 Within the time stated in the Contract Data the Contractor shall submit to the Engineer for approval a Programme showing the general methods, arrangements, order and timing for all the activities in the Works along with monthly cash flow forecast.
- 27.2 An update of the Programme shall be a Programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work including any changes to the sequence of the activities.
- 27.3 The contractor shall submit to the Engineer, for approval, an updated Programme at intervals no longer than the period stated in the Contract Data. If the Contractor does not submit an updated Programme within this period, the Engineer may withhold the amount stated in the Contract Data from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Programme has been submitted.
- 27.4 The Engineer's approval of the Programme shall not alter the Contractor's obligations. The Contractor may revise the Programme and submit it to the Engineer again at any time. A revised Programme is to show the effect of Variations and Compensation Events.

*\* Dispute Review Expert to be provided for works costing up to Rs. 50 Crores. Dispute Review Board of three members (One from Employer, One from Contractor and One to be nominated by IRC Council and agreed by the representative members of Employer and Contractor) for works costing more than Rs. 50 crores.*

### **28. Extension of the Intended Completion Date**

- 28.1 The Engineer shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work and which would cause the Contractor to incur additional cost.
- 28.2 The Engineer shall decide whether and by how much to extend the Intended Completion Date within 35 days of the Contractor asking the Engineer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to co-operate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.
- 28.3 The Engineer shall within 14 days of receiving full justification from the contractor for extension of Intended Completion Date refer to the Employer his decision. The Employer shall in not more than 21 days communicate to the Engineer the acceptance or otherwise of the Engineer's decision. If the Employer fails to give his acceptance, the Engineer shall not grant the extension and the contractor may refer the matter to the Dispute Review Expert under Clause 24.1

### **29. Deleted**

### **30. Delays Ordered by the Engineer**

- 30.1 The Engineer may instruct the Contractor to delay the start or progress of any activity within the Works.

**31. Management Meetings**

- 31.1 Either the Engineer or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.
- 31.2 The Engineer shall record the business of management meetings and is to provide copies of his record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken is to be decided by the Engineer either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

**32. Early Warning**

- 32.1 The Contractor is to warn the Engineer at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price or delay the execution of works. The Engineer may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate is to be provided by the Contractor as soon as reasonably possible.
- 32.2 The Contractor shall co-operate with the Engineer in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Engineer.



## C. QUALITY CONTROL

### 33. Identifying Defects

- 33.1 The Engineer shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer considers may have a Defect.

### 34. Tests

- 34.1 If the Engineer instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect the test shall be a Compensation Event.

### 35. Correction of Defects

- 35.1 The Engineer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- 35.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Engineer's notice.

### 36. Uncorrected Defects

- 36.1 If the Contractor has not corrected a Defect within the time specified in the Engineer's notice, the Engineer will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

## **D. COST CONTROL**

### **37. Bill of Quantities**

- 37.1 The Bill of Quantities shall contain items for the construction, installation, testing and commissioning work to be done by the Contractor.
- 37.2 The Bill of Quantities is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item.

### **38. Changes in the Quantities**

- 38.1 If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent provided the change exceeds 1% of initial Contract Price, the Engineer shall adjust the rate to allow for the change, duly considering.
- (a) Justification for rate adjustment as furnished by the contractor.
  - (b) Economics resulting from increase in quantities by way of reduced plant, equipment and overhead costs.
  - (c) Entitlement of the contractor to compensation events where such events are caused by any additional work.
- 38.2 The Engineer shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the Prior approval of the Employer.
- 38.3 If requested by the Engineer, the Contractor shall provide the Engineer with a detailed cost breakdown of any rate in the Bill of Quantities.

### **39. Variations**

- 39.1 All Variations shall be included in updated Programmers produced by the Contractor.

### **40. Payments for Variations**

- 40.1 The Contractor shall provide the Engineer with a quotation (with breakdown of unit rates) for carrying out the Variation when requested to do so by the Engineer. The Engineer shall assess the quotation, which shall be given within seven days of the request or within any longer period stated by the Engineer and before the variation is ordered.
- 40.2 If the work in the Variation corresponds with an item description in the Bill of Quantities and if, in the opinion of the Engineer, the quantity of work above the limit stated in Sub Clause 38.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.
- 40.3 If the Contractor's quotation is unreasonable, the Engineer may order the Variations and make a change to the Contract Price which shall be based on Engineer's own forecast of the effects of the Variation on the Contractor's costs.

40.4 If the Engineer decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

40.5 The Contractor shall not be entitled to additional payment for costs which could have been avoided by giving early warning.

#### **41. Cash Flow Forecasts**

41.1 When the Programme is updated, the contractor is to provide the Engineer with an updated cash flow forecast.

#### **42. Payment Certificates**

42.1 The Contractor shall submit to the Engineer monthly statements of the estimate value of the work completed less the cumulative amount certified previously.

42.2 **The Engineer shall check the Contractor's monthly statement within 14 days** and certify the amount to be paid to the Contractor after taking into account any credit or debit for the month in question in respect of materials for the works in the relevant amounts and under conditions set forth in sub-clause 51(3) of the Contract Data (Secured Advance)

42.3 The value of work executed shall be determined by the Engineer.

42.4 The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.

42.5 The value of work executed shall include the valuation of Variations and Compensation Events.

42.6 The Engineer may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

#### **43. Payments**

43.1 Payments shall be adjusted for deductions for other recoveries in terms of the contract and taxes at source, as applicable under the law. Contractors the amount certified by Engineer as per availability of funds and no interest shall be payable in case of any delayed payment.

~~43.2 If an amount certified is increased in a later certificate as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.~~

43.3 Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

#### **44. Compensation Events**

44.1 The following are Compensation Events unless they are caused by the Contractor.

(a) The Employer does not give access to a part of the Site by the Site Possession Date stated in the Contract Data.

(b) The Employer modifies the schedule of other contractors in a way which affects the work of the contractor under the contract.

- (c) The Engineer orders a delay or does not issue drawings, specifications or instructions required for execution of works on time.
  - (d) The Engineer instructs the Contractor to uncover or to carry out additional tests upon work which is then found to have no Defects.
  - (e) The Engineer does not approve of a sub contract to be let, within 15 days.
  - (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of Letter of Acceptance from the information issued to Bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the site.
  - (g) The Engineer gives an instruction for dealing with an unforeseen condition, cause by the Employer, or additional work required for safety or other reasons.
  - (h) Other contractors, public authorities, utilities or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.
  - (i) The advance payment is delayed, beyond 28 days after receipt of application and bank guarantee.
  - (j) The effect on the Contractor of any of the Employer's Risks.
  - (k) The Engineer unreasonably delays issuing a Certificate of Completion.
  - (l) Other Compensation Events listed in the Contract Data or mentioned in the Contract.
- 44.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date is extended. The Engineer shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.
- 44.3 As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it is to be assessed by the Engineer and the Contract Price shall be adjusted accordingly. If the contractors forecast deemed unreasonable, the Engineer shall adjust the Contract Price based on Engineer's own forecast. The Engineer will assume that the Contractor will react competently and promptly to the event.
- 44.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor not having given early warning or not having co-operated with the Engineer.
- 45. Tax**
- 45.1 The rates quoted by the Contractor shall be deemed to be inclusive of the sales and other taxes that the Contractor will have to pay for performance of this Contract. The Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law.
- 46. Currencies**
- 46.1 All payments shall be made in Indian Rupees.

**47. Price Adjustment**

DELETED

**48. Retention**

48.1 The Employer shall retain from each payment due to the Contractor the proportion stated in the Contract Data until Completion of the whole of the Works.

48.2 On Completion of the whole of the Works half the total amount retained is repaid to the Contractor and half when the Defects Liability Period has passed and the Engineer has certified that all Defects notified by the Engineer to the Contractor before the end of this period have been corrected.

48.3 On completion of the whole works, the contractor may substitute retention money with an “on demand” Bank guarantee.

**49. Liquidated Damages**

49.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date (for the whole of the works or the milestone as stated in the contract data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor’s liabilities.

49.2 If the intended completion date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the over payment calculated from the date of payment to the date of repayment at the rates specified in Sub-Clause 43.1.

49.3 If the contractor fails to comply with the time for completion as stipulated in the tender, then the contractor shall pay to the employer the relevant sum stated in the Contract Data as liquidated damages for such default and not as penalty for everyday or part of day which shall elapse between relevant time for completion and the date stated in the taking over certificate of the whole of the works on the relevant section, subject to the limit stated in the contract data.

The employer may, without prejudice to any other method of recovery deduct the amount of such damages from any monies due or to become due to the contractor. The payment or deduction of such damages shall not relieve the contractor from his obligation to complete the works on from any other of his obligations and liabilities under the contract.

49.4 If, before the Time for completion of the whole of the works, or, if applicable, any section, a Taking-Over Certificate has been issued for any part of the Works or of a section, the liquidated damages for delay in completion of the remainder of the works or of that Section shall, for any period of delay after the date stated in such Taking-Over Certificate, and in the absence of alternative provisions in the Contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the works or Section, as applicable. The provisions of this Sub-Clause shall only apply to the rate of liquidated damages and shall not affect the limit there of.

**50. Bonus -**

DELETED

**51. Advance Payment -**

DELETED

**52. Securities**

- 52.1 The Performance Security (including additional security for unbalanced bids) shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer and denominated in Indian Rupees. The Performance Security shall be valid until a date 28 days from the date of expiry of Defects Liability Period and the additional security for unbalanced bids shall be valid until a date 28 days from the date of issue of the certificate of completion.

**53. Deleted****54. Cost of Repairs**

- 54.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the contractor at the Contractor's cost if the loss or damage arises from the contractor's acts or omissions.

## **E. FINISHING THE CONTRACT**

### **55. Completion**

55.1 The Contractor shall request the Engineer to issue a Certificate of Completion of the works and the Engineer will do so upon deciding that the work is completed.

### **56. Taking Over**

56.1 The Employer shall take over the Site and the Works within seven days of the Engineer issuing a certificate of Completion.

### **57. Final Account**

57.1 The Contractor shall supply to the Engineer a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Engineer shall issue a Defect Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Engineer shall decide on the amount payable to the Contractor and issue a payment certificate, within 56 days of receiving the Contractor's revised account.

### **58. Operating and Maintenance Manuals**

58.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract Data.

58.2 If the Contractor does not supply the Drawings and/or Manuals by the dates stated in the Contract Data, or they do not receive the Engineer's approval, the Engineer shall withhold the amount stated in the Contract Data from payments due to the Contractor.

### **59. Termination**

59.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

59.2 Fundamental breaches of Contract include, but shall not be limited to the following

- (a) The contractor stops work for 28 days when no stoppage of work is shown on the current Programme and the stoppage has not been authorized by the Engineer.
- (b) The Engineer instructs the Contractor to delay the progress of the Works and the instruction is not withdrawn within 28 days.
- (c) The Employer or contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
- (d) A payment certified by the Engineer is not paid by the Employer to the Contractor within 56 days of the date of the Engineer's Certificate.
- (e) The Engineer gives Notice that failure to correct particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer.

- (f) The Contractor does not maintain a security, which is required.
- (g) The Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the Contract Data; and
- (h) If the Contractor in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract

For the purpose of this paragraph: “corrupt practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract executing. “Fraudulent Practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Bidders (Prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition”.

- 59.3 When either party to the Contract gives notice of a breach of contract to the Engineer for a cause other than those listed under Sub-Clause 59.2 above, the Engineer shall decide whether the breach is fundamental or not.
- 59.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.
- 59.5 If the Contract is terminated the Contractor shall stop work immediately, make the site safe and secure and leave the site as soon as reasonably possible.

## **60. Payment upon Termination**

- 60.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a certificate for the value of the work done less advance payments received upon the date of the issue of the certificate, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor the difference shall be a debt payable to the Employer.
- 60.2 If the contract is terminated at the Employer’s convenience or because of a fundamental breach of Contract by the Employer, the Engineer shall issue a Certificate for the value of the work done, the cost of balance material brought by the contractor and available at site, the reasonable cost of removal of Equipment, repatriation of the Contractor’s personnel employed solely on the Works, and the Contractor’s Costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract and less taxes due to be deducted at source as per applicable law.

## **61. Property**

- 61.1 All materials on the site, Plant, Equipments, Temporary Works and Works are deemed to be the property of the Employer, if the Contract is terminated because of a Contractor’s default.

## **62. Releases from Performance**

- 62.1 If the contractor is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor the Engineer shall certify that the Contract has



been frustrated. The Contractor shall make the site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

## F. SPECIAL CONDITIONS OF CONTRACT

### 1. LABOUR

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

### 2. COMPLIANCE WITH LABOUR REGULATIONS

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

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

#### **SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK.**

- a) **Workmen Compensation Act 1923:** - The Act provides for compensation in case of injury by accident arising out of and during the course of employment.
- b) **Payment of Gratuity Act 1972:** - Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more on death, the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.
- c) **Employees P.F. and Miscellaneous Provision Act 1952 :-** The Act provides for monthly contributions by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are :
  - (i) Pension or family pension on retirement or death, as the case may be.
  - (ii) Deposit linked insurance on the death in harness of the worker.
  - (iii) Payment of P.F. accumulation on retirement/death etc.

- d) **Maternity Benefit Act 1951 :-** The Act provides for leave and some other benefits to Women employees in case of confinement or miscarriage etc.
- e) **Contract Labour (Regulation & Abolition) Act 1970 :-** The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the principal Employer by law. The Principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or contractor of Principal Employer, if they employ 20 or more contract labour.
- f) **Minimum Wages Act 1948 :-** The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act, if the employment is a scheduled employment. Construction of buildings, Roads, Runways is scheduled employments.
- g) **Payment of Wages Act 1936 :-** It lays down as to by what date the wages are to be paid when it will be paid and what deductions can be made from the wages of the workers.
- h) **Equal Remuneration Act 1979:-** The Act provides for payment of equal wages for work of equal nature to male and female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.
- i) ~~**Payment of Bonus Act 1965:-** The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of 8.33 % of wages and maximum of 20% of wages to employees drawing Rs. 3500/- per month or less. The bonus to be paid to employees getting Rs. 2500/- per month or above up to Rs.3500/- per month shall be worked out by taking wages as Rs. 2500/- per month only. The Act does not apply to certain establishments. The newly set up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.~~
- j) **Industrial Disputers Act 1947 :-** The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- k) **Industrial Employment (Standing Orders) Act 1946:-** It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.
- l) **Trade Unions Act 1926 :-** The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- m) **Child Labour :- Prohibition and Regulation) Act 1986 :-** The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in Building and Construction Industry.
- n) **Inter-State Migrating Workmen's (Regulation of Employment & Conditions of Service) Act 1979 :-** The Act is applicable to an establishment which employees 5 or more Inter-State migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain

facilities such as housing, medical aid, traveling expenses from home upto the establishment and back etc.

- o) **The Building and Other Construction Workers (Regulation of Employment and Conditions of Services) Act 1996 and the Cess Act of 1996 :-** All the establishments who carry on any building or other construction work and employees 10 or more workers are covered under this Act,. All such establishments are required to pay cess at the rate not exceeding 2 % of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens First Aid Facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registered Officer appointed by the Government.
- p) **Factories Act 1948 :-** The act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.

### 3. Arbitration (GCC Clause 25.3)

**3.1** Except where otherwise specified in the contract and subject to the powers delegated to him by Government under the code, rules then in the force, the decision of the Superintending Engineer of the Circle for the time being shall be final, conclusive and binding on all parties of the contract upon all questions relating to the meaning of the specifications, designs, drawings and instruction hereinbefore mentioned and as to the quality of workmanship or materials used on the work, or as to any other question, claim right, matter or things whatsoever, if any way arising out of, or relating to the contract, designs, drawings, specifications, estimates , instructions, orders, or other conditions, or otherwise concerning the works, or the execution, or failure to execute the same, whether arising during the progress of the work, or after the completion or abandonment thereof.

**3.2** The Contractor may within thirty days of receipt by him of any order passed by the Superintending Engineer of the Circle as aforesaid appeal against it to the Chief Engineer, concerned with the contract work or project provided that -

- (a) The accepted value of the contract exceeds Rs. 10 lakhs  
(Rupees Ten lakhs)
- (b) Amount of claim is not less than Rs. 1.00 Lakh  
(Rupees One Lakh).

**3.3** If the Contractor is not satisfied with the order passed by the Chief Engineer as aforesaid, the Contractor may, within thirty days of receipt by him of any such order appeal against it to the concerned Secretary, Public Works Department/Irrigation Department who, if convinced that Prima-facie the Contractors claim rejected by Superintending Engineer/Chief Engineer is not frivolous and that there is some substance in the claim of the Contractor as would merit a detailed examination and decision by the Standing Committee, shall put up to the Standing Committee at Government level for suitable decision

(Vide PW Circular No. CAT-1086-CR-110/Bldg.2 Dated 7.5.1986).

**SECTION – 4**  
**CONTRACT DATA**

Contractor  
Engineer

No. of corrections

Executive

## CONTRACT DATA

Items marked "N/A" do not apply in this Contract		Clause Reference with respect to Section - 3	
1.	Name of the Employer is <b>Chief Executive Officer, Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001.</b>	[Cl.1.1]	
2.	The Engineer is <b>Executive Engineer, Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001.</b>		
3.	The Defects Liability Period is <b>60 Months</b> from the date of Completion.	[Cl.1.1 & 35]	
4.	The Start Date shall be 7 days from the date of issue of the Notice to proceed with the work.	[Cl.1.1]	
5.	The Intended Completion Date for the whole of the works is 24 (Twenty-Four) months including monsoon period after start of work with the following milestones:	[Cl.1.1, 17 & 28]	
<b>Milestone dates:</b>		[Cl.2.2, & 49.1]	
	<b>Physical Works to be completed</b>	<b>Period for Mild Stone</b>	
		<b>Period from the start date</b>	
i)	<b>Milestone 1 (work up to plinth) : 20 % of the contract price</b>	<b>5 (Five) Months</b>	<b>5 (Five) Months</b>
ii)	<b>Milestone 2 (RCC Superstructure works) : 35 % of the contract price</b>	<b>8 (Eight) Months</b>	<b>13 (Thirteen) Months</b>
iii)	<b>Milestone 3 (Civil works) : 20 % of the contract price</b>	<b>6 (Six) Months</b>	<b>19 (Nineteen) Months</b>
iv)	<b>Milestone 4 (Facade &amp; MEP works) : 25 % of the contract price</b>	<b>5 (Five) Months</b>	<b>24 (Twenty-Four) Months</b>
7.	The site is <b>Construction of Proposed Office Building on Plot No. C-47 'G' Block at Bandra Kurla Complex (BKC) Mumbai at Maharashtra Maritime Board.</b>	[Cl.1.1]	
8.	<b>The name and identification number of the Contract is :</b>	[Cl.1.1]	

9	<b>Construction of Proposed Office Building on Plot No. C-47 'G' Block at Bandra Kurla Complex (BKC) Mumbai at Maharashtra Maritime Board.</b>		[Cl.1.1]
	<b>Scope of Work :</b>		
	1) Foundation -	Raft foundation with basement	
	2) Super Structure -	R.C.C. frame structure with column, beam, chajja, Pardi, Staircase in C.C. Post Tensioning work	
	3) External wall -	200mm thick AAC block masonry	
	4) Internal wall -	100mm thick AAC block masonry	
	5) Flooring -	Trimix flooring in Parking area & Pavers in GF Driveway ( <i>Finishes works like Flooring, Cladding, Painting, False Ceiling, Doors etc. shall not be part of this Tender package</i> )	
	6) Plaster -	Internal plaster – 13 mm Gypsum plaster External plaster – Sand face plaster	
	7) Waterproofing -	Basement – Box type Membrane waterproofing Terrace – Brick bat coba with china mosaic Toilets / WC – Waterproof Plaster Water tanks – Food grade Epoxy coating	
	8) Façade	Dry Granite stone cladding DGU Structural Glazing system PVDF coated Aluminium Grill	
	9) Electrical work	MV Switchgear, LT cabling, Cable tray / Conduits, Point wiring, Earthing, Lighting protection, Aviation light, Data/Wi-fi, Telephone, TV system, Solar system, DG set	
	10) Plumbing work	Sanitary fittings and fixtures, Plumbing work	
	11) Firefighting work	Firefighting works, Firefighting pump,	
	12) HVAC / Ventilation system	VRV or VRF system, Fans & Accessories	
	13) IBMS	CCTV, Security system, Access control system, FAS, BMS, GAS Suppression system, High sensitivity smoke detection system, Water leak detection system, Rodent repellent system	
	14) Elevators	Gearless with machine room Elevators	
	15) Stack Parking system		

	<b>(B) Bridge Work NIL</b> <b>(C) Other Items</b> Any other items as required to fulfil all contractual obligations as per the Bid documents.	[ Cl. 1.1 ]
10.	The following documents also form part of the Contract: <b>Addendum issued under clause 9.2.4. pursuant to clause 10 if any</b>	[ Cl. 2.3(9) ]
11.	The law, which applies to the Contract, is the <b>law of Union of India.</b>	[ Cl. 3.1 ]
12.	The language of the Contract documents is <b>English</b>	[ Cl. 3.1 ]
13.	Limit of subcontracting – <b>Not allowed</b>	[ Cl. 7.1 ]
14.	The Schedule of Other Contractors – NIL-	[ Cl. 8 ]
15.	The Schedule of Key personnel - As per 4.5.4 to section I	[Cl. 9]
16.	The minimum insurance cover for physical property, injury and death is Rs.5 lakhs per occurrence with the number of occurrences limited to four. After each occurrence, Contractor will pay additional premium necessary to make insurance valid for four occurrences always.	[Cl. 13]
17.	Site investigation report – To be assessed by the contractor	[Cl. 14]
18.	The site possession Dates shall be within seven days from issue of notice to proceed with the work.	[Cl. 21]
19.	Fees and types of reimbursable expenses to be paid to the Dispute Review Board (To be inserted later)	[Cl. 25]
20.	<del>Appointing Authority for the Dispute Review Board – council, Indian Roads Congress, New Delhi.</del>	<del>{Cl. 26}</del>
21.	The period for submission of the programme for approval of Engineer shall be 21 days from the issue of letter of Acceptance	[Cl. 27.1]
22.	Deleted	<del>{Cl. 27.3}</del>
23.	Deleted	<del>{Cl. 27.3}</del>
24.	The following events shall also be Compensation Events:	[Cl. 44]
	Substantially adverse ground conditions encountered during the course of execution of work not provided for in the bidding document –	
	(i) Removal of underground utilities detected subsequently	
	(ii) Significant change in classification of soil requiring additional mobilisation by the contractor e.g. ordinary soil to rock excavation	
	(iii) Removal of unsuitable material like marsh, debris dumps etc. not caused by the contractor	
	(iv) Artesian conditions.	



	(v)	Seepage, erosion, landslide	
	(vi)	River training requiring protection of permanent work	
	(vii)	Presence of historical, archaeological or religious structures, monuments interfering with the works	
	(viii)	Restriction of access to ground imposed by civil, judicial, or military authority.	
<b>25.</b>	The currency of the Contract is Indian Rupees		[Cl. 46]

<b>26.</b>	The formula (e) for adjustment of prices are:		[Cl. 47]
	R = value of work as defined in Clause 47.1 of conditions of Contract		

**Adjustment For Labour Component :**

<b>(i)</b>	Price adjustment for increase or decrease in the cost due to labour shall be paid in accordance with the following formula;		
	$V_L = 0.85 \times \frac{P_1}{100} \times R \times [(L_i - L_o) / L_o]$		
	V <sub>L</sub> = Increase or decrease in the cost of work during the month under consideration due to changes in rates for local labour.		
	L <sub>o</sub> = The consumer price index for industrial workers for the state on 28 days preceding the date of opening of bids as published by Labour Bureau, Ministry of Labour, Government of India.		
	L <sub>i</sub> = The Consumer Price Index for industrial workers for the state for the month under consideration as published by Labour Bureau, Ministry of Labour, Government of India.		
	P <sub>1</sub> = Percentage of labour component of work.		

**Adjustment For Cement Component :**

<b>(ii)</b>	Price adjustment for increase or decrease in the cost of Cement shall be paid in accordance with the following formula :		
	$V_c = 0.85 \times \frac{P_c}{100} \times R \times [(C_i - C_o) / C_o]$		
	V <sub>c</sub> = Increase or decrease in the cost of work during the month under consideration due to changes in rates for cement		
	C <sub>o</sub> = The all India wholesale price index for cement on 28 days preceding the date of opening of Bids as published by the Ministry of Industrial Development, Government of India, New Delhi.		
	C <sub>i</sub> = The all India average wholesale price index for cement for the month under consideration as published by the Ministry of Industrial Development, Government of India, New Delhi.		
	P <sub>c</sub> = Percentage of cement component of the work.		

**Adjustment For Steel Component :**

<b>(iii)</b>	Price adjustment for increase or decrease in the cost of steel shall be paid in accordance with the following formula :		
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	$V_s = \frac{0.85 \times PS \times R \times (S_i - S_o)}{100}$	
	$V_s =$ Increase or decrease in the cost of work during the month under consideration due to changes in rate for Steel.	
	$S_o =$ The all India wholesale price index for 4 Steel (Bars & Rods) on 28 days preceding the date of opening of Bids as published by the Ministry of Industrial Development, Government of India, New Delhi.	
	$S_i =$ The all India wholesale price index for 4 Steel (Bars & Rods) on 28 days preceding the date of opening of Bids as published by the Ministry of Industrial Development, Government of India, New Delhi.	
	$P_c =$ Percentage of cement component of the work.	
	<i>Note :- For the application of this clause, index of Bars and Rods has been chosen to represent steel group.</i>	
<b>(iv)</b>	<b>Adjustment For Bitumen Component :</b>	
	Deleted	
<b>(v)</b>	<b>Adjustment of POL (Fuel and Lubricant) Component :</b>	
	Price adjustment for increase or decrease in the cost of POL (fuel and lubricant) shall be paid in accordance with the following formula;	
	$V_f = \frac{0.85 \times P_f}{100} \times R \times \frac{(F_i - F_o)}{F_o}$	
	$V_f =$ increase or decrease in the cost of work during the month under consideration due to changes in rates for fuel & lubricants.	
	$F_o =$ The official retail price of High speed Diesel at the existing consumer pumps of IOC depot at nearest centre on the day 28 days prior to the date of opening of bids.	
	$F_i =$ The official retail price of HSD at the existing consumer pumps of IOC at nearest centre for the 15 <sup>th</sup> day of month of the under consideration..	
	$P_f =$ Percentage of fuel & lubricants component of the work.	
	<i>Note : For the application of this clause, the price of High Speed Diesel &amp; Oil has been chosen to represent fuel &amp; lubricants group.</i>	
	<b>Adjustment of Plant and Machinery Spares Component :</b>	
	Deleted	

<b>Adjustment of Other Materials Component :</b>			
<b>(vii)</b>	Price adjustment for increase or decrease in the cost of local materials other than cement, Steel, bitumen, and POL procured by the contractor shall be paid in accordance with the following formula;		
	$V_m = 0.85 \times P_m / 100 \times R \times (M_i - M_o) / M_o$		
	$V_m$ = Increase or decrease in the cost of work during the month under consideration due to changes in rates for local materials other than cement, Steel, bitumen, and POL .		
	$M_o$ = The all India wholesale price index (all Commodities) on 28 days preceding the date of opening of Bids as published by the Ministry of Industrial Development, Government of India, New Delhi.		
	$M_i$ = The all India wholesale price index (all Commodities) on for the month under consideration as published by the Ministry of Industrial Development, Government of India, New Delhi.		
	$P_m$ = Percentage of local materials component (other than cement, steel, bitumen and POL) of the work.		
	The following percentage will govern the price adjustment for the entire contract :		
	1	Labour $P_l =$	<b>37%</b>
	2	Cement $P_c =$	<b>14 %</b>
	3	Steel (TMT+St.steel) $P_s =$	<b>29 %</b>
	5	POL $P_f =$	<b>7 %</b>
	6	Plant & Machinery Spares $P_p =$	<b>--</b>
	7	Other Materials $P_m =$	<b><u>13 %</u></b>
		Total	<b>100.00 %</b>
<b>27.</b>	The Proportion of payments retained (retention money) shall be 6 % from each bill subject to a maximum of 5 % of final contract price.		[Cl. 48]
<b>28.</b>	Amount of liquidated damages for delay in completion of works	<b><u>(I) for Whole of work</u></b>	[Cl. 49]
		(1/2000) <sup>th</sup> of the initial contract price rounded off to the nearest thousand per day i.e. <b>Rs. 2,89,000.00</b> per day	

		<b>(II) for sectional completion</b>	
		(Whatever specified in Item 6 of Contract Data) - (1/2000) <sup>th</sup> of initial contract price for section of work under <b>(i) Milestone I</b> rounded off to the nearest thousand per day i.e. <b>Rs. 57,800.00</b> per day. <b>(ii) Milestone II</b> rounded off to the nearest thousand per day i.e. <b>Rs. 1,01,100.00</b> per day. <b>(iii) Milestone III</b> rounded off to the nearest thousand per day i.e. <b>Rs. 57,800.00</b> per day.	
		<b>(iv) Milestone IV</b> rounded off to the nearest thousand per day i.e. <b>Rs. 72,200.00</b> per day.	
<b>29</b>	Maximum limit of liquidated damages for delay in completion of work.	10% of the Initial Contract Price rounded off to the nearest thousand. i.e. <b>Rs. 5,77,63,000.00</b>	[Cl. 49]
<b>30.</b>	Amount of Bonus for early completion of whole of the works <b>DELETED</b>		[Cl. 50]
<b>31.</b>	Maximum limit of bonus for early completion of work <b>DELETED</b>		[Cl. 50]
<b>32.</b>	The amounts of the advance payment are. <b>DELETED</b>		[Cl. 51 & 52]

<b>33.</b>	The Securities shall be for the following minimum amounts equivalent as a percentage of the Contract Price:	[Cl. 52]
	Performance Security for 2 percent of contract price plus Rs..... (to be decided after evaluation of the bid) as additional security in terms of ITB Clause 29.5	

	The Standard form of Performance Security acceptable to the Employer shall be an <u>unconditional</u> Demand Draft (DD) of the type as presented in Section 8 of the Bidding Documents.	
<b>34.</b>	The Schedule of Operating and Maintenance Manuals .....N/A	[Cl. 58]

**SECTION – 5**  
**TECHNICAL SPECIFICATION**

## **TECHNICAL SPECIFICATIONS**

### **1.1 PREAMBLE**

1.1 The Technical Specifications contained herein shall be read in conjunction with the other Bidding Documents as specified in Volume –I, III & IV.

### **1.2 SITE INFORMATION**

1.2.1 The information give hereunder and provided elsewhere in these documents is given in good faith by the Employer but the Contractor shall satisfy himself regarding all aspects of site conditions and no claim will be entertained on the plea that the information supplied by the Employer is erroneous or insufficient.

1.2.2 The area in which the Works are located is plain terrain

#### **1.2.3 General Climatic Conditions**

1.2.3.1 The temperature in this region is a under: During summer months, average maximum temperature is above 40°C.

1.2.3.2 The average annual rainfall in the area is of the order of 500mm

#### **1.2.4 Seismic Zone (Zone III) Exposure condition- Server.**

The Works are located in Seismic Zone II as defined in IRC: 6-2000.

## **2 GENERAL REQUIREMENTS**

The Technical Specifications in accordance with which the entire work described hereinafter shall be constructed and completed by the Contractor shall comprise of the following,

### **2.1 PART- 1- General Technical Specifications**

The General Technical Specifications shall be the “SPECIFICATIONS FOR ROAD AND BRIDGE WORKS” FIFTH REVISION APRIL 2013, issued by the Ministry of Surface Transport (Road Wing), Government of India and published by the Indian Roads Congress.

2.2 Maharashtra State Public Works Department Specifications Book.

### **2.3 PART – II- Supplementary Technical Specifications.**

The Supplementary Technical Specifications shall comprise of various Amendments / Modifications / Additions to the “SPECIFICATION FOR ROAD AND BRIDGE WORKS” referred to in PART–1 above and Additional Specifications for particular item of Works not already covered in PART-1.

2.4 A particular clause or a part thereof in “SPECIFICATION FOR ROAD AND BRIDGE WORKS (FIFTH REVISION, APRIL 2013)” referred in PART-I above, where Amended / Modified / Added upon and incorporated in PART-II, referred to above , such Amended / Modified / Added upon, and incorporated in PART-II, referred to above, such Amendment / Modification / Addition supersedes the relevant Clause or part of the Clause.

- 2.5 The Additional Specifications shall comprises of specifications for particular item of Works not already covered in PART-I.
- 2.6 When an Amended / Modified / Added Clause supersedes a Clause or part thereof in the said Specifications, then any reference to the superseded Clause shall be deemed to refer to the Amended / Modified /Added Clause or part thereof.
- 2.7 In so far as Amended / Modified / Added Clause may come in conflict or be inconsistent with any of the provisions of the said Specifications under reference, the Amended / Modified /Added Clauses shall always prevail.
- 2.8 The following Clauses in the “SPECIFICATIONS FOR ROAD AND BRIDGE WORKS (FIFTH REVISION APRIL 2013)” are applicable /Modified for project.  
112, 201, 301, 309,401, 404, 408,501, 502, 503,504, 507, 801, 803, 900, 1000, 3000



### GENERAL SPECIFICATION FOR WATERPROOFING

- (1) The work of waterproofing described in the following items shall be carried out by the contractor only through a renowned specialist waterproofing agency using cement waterproofing compounds, as approved in writing by the Engineer-in-charge.
- (2) The Contractor shall give before execution, detailed specifications for each item of works of waterproofing to be executed according to the specifications of the specialized agency, he proposes to employ, for approval. The work shall not be started unless approval in writing is given by the Engineer in charge to the said specification.
- (3) The Contractor shall give a guarantee bond on requisite stamp paper for a minimum period of 7 years for all the items of waterproofing done. During the guarantee period the Contractor shall entirely be responsible to rectify any defect at his own cost to maintain the work in waterproof condition. The waterproofing Contractor shall also have to make good all the surroundings disturbed by him during the rectification work at his own cost. The form of written guarantee shall be on a legal stamped agreement acceptable to the Government. The Guarantee shall be given within one month from the date of completion of water proofing treatment but any delay in furnishing the guarantee shall not relieve the contractor from implications of the clause.
- (4) 10% (Ten percent) of the cost of the waterproofing work executed shall be retained as “Retention Money” for a period of 7 years covering the guarantee, and the same shall be released only after satisfactory performance of the treatment during guarantee period of 7 years. This amount may be converted into any approved interest bearing security (for 7 years after completion of defect liability period), in the name of **Chief Executive Officer, Maharashtra Maritime Board** on receipt of such written request from the contractor.
- (5) The waterproofing agency as approved by Engineer-in-charge shall provide and install at his own cost the following for his own use and remove the same after completion of the work:

- I) Two pumps electrical/ diesel operated for watering and curing of work at any level in the building. Curing for all items shall be carried out for a minimum period of 14 days.
  - II) Temporary Mild Steel Water storage tanks.
  - III) Temporary galvanized iron pipeings and fittings for water line.
  - IV) Flexible hose lengths.
  - V) Cement Godown, site office.
- (6) Injections to reinforced cement concrete slab, wherever required, have to be undertaken by the Contractor free of cost.
  - (7) Before starting the waterproofing work, the surface receiving the treatment shall be cleaned properly.
  - (8) The item of waterproofing as given in the Schedule 'B' applies for work in any position and on any floors and at any heights. The lift of materials shall not form any criteria for extra payment.
  - (9) For the reference of contractor, general guideline specifications for waterproofing are attached herein with the general specification for waterproofing.

### **General Guidelines for Waterproofing work**

#### **For reference of contractor.**

(Note : The contractor is required to give detailed specification for each item of waterproofing work).

- 1. Roof, Slab and terrace:  
Providing. average 112 mm thick cement based Indian waterproofing treatment with Brick Bat Coba beading by keeping the treatment minimum 75 mm thick at the rain water pipe point and keeping the gradient not flatter than 1 in 100.
- a) Cleaning the surface to the requirements.
- b) Giving a coat of wash mixed with cement.

- c) Providing 12mm thick cement mortar bed, with admixture of waterproofing compound to form a bed for brickbats. Special care shall be taken at the junction of parapet and terrace slab to ensure gaps, if any, are properly sealed.
- d) Placing brickbats of varying size (average 80 mm thick) to proper slope and grouting their joints with chemical process in cement mortar with 2% of waterproofing compound.
- e) Providing all around the terrace large waterproof wattas (rounding's) up to a height of 30 cm in PCC or as directed above the finished level of waterproof treatment.
- f) Finishing: Finishing the top surface with average 20 mm thick layers of cement mortar 1:3 added with jute fibre at one kilogram per bag, including finishing the surface smooth with cement slurry mixed with approved waterproofing compound, marking finished surface with false squares of 300mmx300 mm.
- g) Curing: Curing shall be done *for* 14 days. Curing of top surface shall be done by making base ( wattas ) with lean cement mortar to keep water standing on the surface.
- h) Carrying out the test: The test shall be carried out by pounding method. Payment for the item shall be released only after results of pond test are satisfactory.

## 2. Toilets:

- a) Cleaning the surface to the department's requirements.
- b) Giving a coat of wash mixed with cement.
- c) Providing average 15 cm thick waterproofing treatment to the bottom of toilet floors.
- d) Providing 20 mm to 25 mm thick cement mortar waterproof treatment to the walls of toilets up to the height of 0.30 metre above the finished floor level.
- e) Providing waterproof wattas all around the toilets.
- f) Grouting the mouths of inlets and outlets
- g) Filling sunk portion with brickbats including waterproof mortar and the top surface left rough to form a key fortiles.

## 3. Overhead tanks :

Work under some items in Schedule 'B' of the tender pertains to construction overhead water tank. After completion of the work, water tank as a whole shall be tested for water tightness and leakages if any shall be rectified forthwith 'without any extra cost to the department.

**GUARANTEE BOND FOR WATERPROOFING WORK**

**(On stamp paper worth Rupees 100/-)**

Name of work :

Name of Agency :

Agreement No. :

The contractor hereby declares that the water proofing work carried out under this contract shall be of the best quality and workmanship and shall strictly in accordance with the specifications and particulars contained/mentioned in the clause hereof and the contractor hereby guarantee that the said work should continue to conform to the description and quality aforesaid for a period of **Ten years** from the date of handing over the said work to the Department and notwithstanding the fact that the Department may have inspected and or approved the said work. If during the aforesaid period of **Ten years**, the said work be discovered not to conform to the description and quality aforesaid for a period of **Ten years** from the date of handling over the said work to the Department and notwithstanding the fact that Department may have inspected and or approved the said work. If during the aforesaid period of **Ten years**, the said work be discovered not to conform to the description and quality aforesaid or have deteriorated (and the decision of the Engineer in charge in that behalf will be final and conclusive) the department will be entitled to reject the said work or such portion thereof as may be discovered not to conform to the said description and quality. On such rejection, the work will be at the contractor's risk and all the provisions herein contained relating to rejection of work etc. shall apply. The contractor shall, if so called upon, have to make good the work etc. or such portion thereof, as is rejected by the Engineer in charge, otherwise the contractor shall pay to the Department, such damages, as may arise by the reason of the breach of the condition herein contained. Nothing herein contained shall prejudice any other right of the Department in that behalf under this contract or otherwise.

Date :

Place :

Contractor

**र्णाची आवक आणि खप यांचा हिशेब दाखविणारी  
नोंदवही क्रमांक १**

कामाचे नांव :- -----

मागील सप्ताहापासुन कामाच्या ठिकाणी असलेली शिल्लक

आवक आणि खप यांचा हिशेब

दिनांक	गाडी क्रमांक	मिळालेल्या पोत्यांची संख्या	वापरलेल्या पोत्यांची संख्या	दिवसाच्या अखेरीस कामाच्या ठिकाणी राहिलेली पोती
एकूण				

कंत्राटदाराची सही

अभियंत्याची सही

नोंदवही क्रमांक २

निरनिराळ्या बाबींवर आठवड्यांमध्ये उपयोगात आणले आवश्यक असलेले सिमेंट परिमाण व प्रत्यक्षात उपयोगात आणलेले परिमाण यांची तुलना दाखविणारे कोष्टक  
आठवड्यांमध्ये केलेल्या कामाचे एकूण अंदाज परिमाण

अ.क्र	बाब	एकूण अंदाज परिमाण
१		

Contractor  
Engineer

No. of corrections

Executive

## ----- रोजी संपणा-या आठवडयासाठी गोषवारा

अ.क्र.	बाबींचे नांव	केलेल्या कामाचे अंदाजे परिमाण		वापरणे आवश्यक असलेले सिमेंटचे परिमाण/पोत्यामध्ये ( पोत्यांच्या प्रत्येक संख्येत )	प्रत्यक्ष वापरलेल्या सिमेंटचे परिमाण ( पोत्यांमध्ये )
		परिमाण	एकमान		
१	२	३	४	५	६

कंत्राटदाराची सही

अवेक्षकाची सही

पोलादाची आवक आणि खप यांचा हिशेब दाखविणारी

नोंदवही क्रमांक १

कामाचे नांव :- .....

मागील सप्ताहापासून कामाच्या ठिकाणी असलेली शिल्लक

आवक आणि खप यांचा हिशेब

दिनांक	गाडी क्र.	मिळालेल्या पोलादाचे वजन	वापरलेल्या पोलादाचे वजन	दिवसाच्या अखेरीस शिल्लक पोलादाचे वजन
एकूण				

कंत्राटदाराची सही

अभियंत्याची सही

नोंदवही क्रमांक २

निरनिराळ्या बाबींवर आठवड्यांमध्ये उपयोगात आणले आवश्यक असलेले परिमाण व प्रत्यक्षात उपयोगात

आणलेले परिमाण यांची तुलना दाखविणारे कोष्टक

आठवड्यामध्ये केलेल्या कामाचे एकूण अंदाज परिमाण

अ.क्र	बाब	एकूण अंदाज परिमाण
१		



## ----- रोजी संपणा-या आठवड्यासाठी गोषवारा

अ.क्र.	बाबीचे नांव	केलेल्या कामाचे अंदाजे परिमाण		वापरणे आवश्यक असलेले पोलादाचे परिमाण मे.टन	प्रत्यक्ष वापरलेल्या पोलादाचे परिमाण मे.टन
		परिमाण	एकमान		
१	२	३	४	५	६

कंत्राटदाराची सही

अवेक्षकाची सही

**DECLARATION OF THE CONTRACTOR**

I/We hereby declare that I/we have made me / us thoroughly conversant with the local conditions regarding all materials and labour on which I/we have based my/our rates for this tender. The specifications and lead of materials on this work have been carefully studied and understood by me/us before submitting this tender. I/we undertake to use only the best materials approved by the **Chief Executive Officer, Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001** or his duly authorised representative before starting the work and to abide by his decision.

I/We hereby undertake to pay the labourers engaged on the work as per minimum wages Act 1948 applicable to the Zone concerned.

**Signature of Contractor**

**33. ADDITIONAL TECHNICAL CONDITIONS**

- 33.1** The work shall be carried out in the best workmanship like manner and in strict accordance with P.W.D. hand book Volume I & II 1960. Edition supplemented by specification attached and as per Standard Specifications Book of Government of Maharashtra of 1979 and as per specific order of the Executive Engineer or his representative from time to time.
- 33.2** The orders issued by the Government in P.W. Department and the Superintending Engineer, from time to time regarding construction procedure shall be binding on the contractor in addition to the specification contained in P.W.D. hand book Volume I & II and book of standard specification of P.W. Department and the specifications enumerated above.
- 33.3** The contractor shall submit day to day account of the materials issued to him and its use and also monthly progress and programme of work.
- 33.4a)** The concrete mix design shall be got approved from Engineer in charge and the mix design shall give preliminary strength of 1.33 times working strength.
- b)** The maximum size of aggregate permissible would be as per A-7 page-8 of Standard Specifications Book 1979 Edition.
- 33.5** The items provided with watering for curing include continuous watering operations throughout the day including lunch hours and also during holidays. For this purpose contractor shall have to construct tank of 5000 liters capacity near each building and provide necessary Booster Pumps etc. to ensure adequate curing and wetting. Hold fasts coming in contact with R.C.C. columns shall be of sizes 30 cm x 4 cm to be fitted with two rows, nails fixed properly in concrete.
- 33.6** For all sand covering items, use of washed mixer sand (with sand washing machine) is obligatory. No separate claim in this regard will be entertained.
- 33.7** Material testing requirement frequency and type of testing is enclosed separately. Material to be used shall be tested accordingly and cost shall be borne by contractor.
- 33.8** For R.C.C. centering plywood and M.S. sheet of approved quality shall be used and adjustable props and fasteners shall be used.
- 33.9** The execution of any work from external side of the building 'H' frame steel scaffolding shall be used. No separate payment for claims in this regard shall be entertained.
- 33.10** The scaffolding shall not be supported on existing external walls of the building by making holes in it and also the scaffolds shall not rest on any part of the building.
- 33.11** Quality Assurance Manual: Contractor shall prepare the quality assurance manual booklet in consultation with the Executive Engineer. Quality assurance manual shall be comprehensive document covering every aspect of the work. Superintending Engineer shall approve this document. The quality manual document shall be used only after approval from

Superintending Engineer. Provision of the quality manual is binding on the contractor. Quality manual shall be treated as a legal document as per with this contract document. It shall be used till the work is completed in full respect.

### **34. SPECIAL CONDITIONS FOR QUALITY CONTROL TESTS AND FREQUENCY**

34.1 Overall quality of the work depends on the quality of ingredient material being used in the work and exercising adequate control over it. It is therefore prime responsibility of the Contractor to get the ingredient material and product tested strictly as per the frequencies stipulated in the Annexure.

34.2 The Quality Control test shall be carried out at various stages of work wise selection of material to be procured for work, acceptance of procured material before its use on the work, in view of its strength, durability, serviceability etc. and as directed by Engineer-in-charge for any other reason of public interest.

34.3 The entire charges towards testing such as sampling, carrying samples to Lab testing of samples etc. will have to be borne by the Contractors.

34.4 The right of acceptance/rejection of material/work done specified above is reserved by Engineer-in-charge in view of non confirmation to frequency of testing.

34.5 In case of failure to observe the frequency of testing by the contractor the Engineer-in-charge will be at liberty to recover testing charges fixed by the dep't. At penal rate. The penal rate will be two times the prevailing testing charges.

### **34.6 SAMPLES AND TESTING MATERIALS**

(A) All material to be used on civil construction work shall be got approved in advance from the Engineer-in charge and for furniture work wood, plywood, laminates, veneer etc. from Architect and Engineer in charge and shall pass the test and / or analysis required by him which will be :

(i) As specified in the specification for the items concerned and / or

(ii) ISI Specifications (whichever and wherever applicable) or

(iii) Such recognised specifications acceptable to Engineer-in-charge as equivalent there to or in absence or such authorised specification.

(iv) Such requirement test and / or. analysis as may be specified by the Engineer -in-charge in order of precedence given above.

(B) The contractor shall at his risk and cost make all arrangements and / or shall provide for all such facilities as the Engineer-in-charge may require for collecting, preparing required number of samples for tests or for analysis at such time and to such place or places as may be directed by the Engineer and bear all charges and cost of testing. Such. samples shall also be deposited with the Engineer-in-charge.

(C) The contractor shall if and when required, submit at his cost the samples of materials to be tested or analysed and if, so directed shall not make use of or incorporate in the work any

materials represented by the samples until the required tests or analysis have been made and the materials, finally accepted by the Engineer-in-charge.

- (D) The contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of the materials.
- (E) The contractor or his authorised representative will be allowed to remain present in the departmental laboratory while testing samples furnished by him. However the results of all the tests carried out in the departmental laboratory in the presence or absence of the contractor or his authorised representative will be binding on the contractor.
- (F) The contractor shall at his own cost set up laboratory to carry out the routine tests of materials which are to be used on the work the tests will have to be carried out either in his field laboratory or in an approved laboratory. In case tests are carried out in field laboratory, at least 50% tests should be carried out in nearest control laboratory of the Department.
- (G) In case of material procured by the contractor, testing as required by the codes and specifications shall be arranged by him at his own cost. Testing shall be done in the presence of authorised representative of the Engineer-in-charge at the nearest laboratory. If additional testing other than as required b) specification is ordered, the testing charges, shall be borne by the Department, if the test results are satisfactory and by the contractor if the same are not satisfactory.
- (H) In case of materials supplied by the Government, if the contractor demands, certain testing, the charges thereof shall be paid by contractor if the testing results are satisfactory and by the Department if the same are not satisfactory.

**Annexure 'A'**  
**QUALITY CONTROL TESTS**

<b>Sr.No.</b>	<b>Material</b>	<b>Test</b>
1	Stone	i) Compressive Strength. ii) Water Absorption
2	Trap Metal	i) Crushing value. ii) Impact value. iii) Abrasion value. iv) Water Absorption. v) Flakiness Index & Elongation index vi) Gradation
3	Bricks	i) Crushing Strength. ii) Water Absorption.
4	Flooring Tiles	i) Flexural strength ii) Water Absorption
5	Glazed Tiles	i) Water Absorption
6	Cement	i) Compressive Strength ii) Initial setting time. iii) Final setting time. iv) Specific Gravity v) Soundness vi) Fineness vii) Std. Consistency
7	Steel	i) Weight per meter. ii) Ultimate Tensile stress. iii) Yield stress iv) Elongation v) Bend Test. Vi) Chemical tests
8	Interlocking concrete paving block	i) Compressive Strength ii) Flexural Test iii) Resistance to wear
9	Wood work (shutters)	i) End immersion tests ii) Knife test iii) Glue adhesion test
10	Cement Concrete	i) Mix design ii) Compressive strength
11	Structural steel	i) Weight/Running metre
12	Sand	i) Water absorption & specific Gravity ii) Fineness Modulus iii) Slit Content iv) Bulk age
13	Water	i) P.H. Value for water ii) Chloride & Sulphate content.

**Annexure 'B'****Construction Material Testing & its frequency**

Sr.	Material	Rate	Frequency
<b>1</b>	<b>CEMENT</b>		
	1) Consistency	}	Test per 50 MT above six tests shall be carried.
	2) Initial & Final Setting time		
	3) Fineness		
	4) Specific Gravity		
	5) Soundness		
	6) Compressive Strength		
<b>2</b>	<b>METAL</b>		
a	1) Sieve Analysis (Gradation)		1 Test for every day work
	2) Sieve Analysis Red Book Specification		1 Test per 100 m <sup>3</sup>
	3) Sieve Analysis Granular Sub Base (N.H.Work) MOST		1 Test per 200 m <sup>3</sup>
b	Water Absorption		1 Test per 200 m <sup>3</sup>
c	Impact (Concrete WBM/BT)		1 Test per 200 m <sup>3</sup>
d	Crushing		1 Test per for Each Source
e	Abrasion		1 Test per for Each Source
f	Flakiness & Elongation Index		1 Test per 200 m <sup>3</sup>
g	Plasticity Index for blind age used for WBM		1 Test per 25 m <sup>3</sup>
<b>3</b>	<b>SAND</b>		
	1) Water Absorption & Specific Gravity		1 Test per for Each Source
	2) Fineness Modulus		1 Test per for Each day
	3) Slit Content		1 Test per for Each day work
	4) Bulk age		1 Test per for Each day work
<b>4</b>	<b>BRICKS</b>		
	1) Water Absorption		For each 50000 No. bricks Above three test are to be carried out
	2) Comp Strength		
	3) Effloresce		
<b>5</b>	<b>Flooring Tiles</b>		
	1) Flexural Strength		For 2000 No. of Tiles above three tests are to be carried out
	2) Water Absorption		
	3) Abrasion		
<b>6</b>	<b>Manglore tiles</b>		
	1) Water Absorption		1 Test- 6 Tiles per 50000 Number
	2) Breaking Load		2 Test- 6 Tiles per 50000 Number
<b>7</b>	<b>Glazed Tiles</b>		
	1) Water Absorption		1 Test- 6 Tiles per 2000 Number
<b>8</b>	<b>Concrete Mix Design</b>		<b>1 Concrete Mix Design for each</b>
	Compressive strength C. C. Cubes for Qty		grade of concrete per every per hour
	Qty. up to 5 m <sup>3</sup>		1 Set (3 Number)
	6-15 m <sup>3</sup>		2 Set (3 No.)

16-30 m <sup>3</sup>	3 Set (3 No.)
31-50 m <sup>3</sup>	4 Set (3 No.)
Quantity above 51 m <sup>3</sup>	4+1 additional set per 50 m <sup>3</sup>
<b>9 MURUM/ SOIL for earth work</b>	
1) Optimum Dry Density	2 Test per 3000 m <sup>3</sup>
2) C.B.R.	1 Test per 3000 m <sup>3</sup>
3) Liquid & Plastic Limit/Plasticity Index	1 Test per 3000 m <sup>3</sup>
4) Filed Density 100% P.D.	1 Test per 3000 m <sup>3</sup>
5) Filed Moisture Content	1 Test per 3000 m <sup>3</sup>
<b>10 WOOD</b>	
1) Moisture Content	1 test per Source
2) Density	1 test per Source
<b>11 WATER</b>	
1) P.H. Value for Water and Sand	1 test per Source
2) Chloride & Sulphate content	2 test per Source
<b>12 Steel</b>	
1) Wt per meter	} One test for every 5.0 MT or part thereof for each diameter
2) Ultimate Tensile Stress	
3) Yield stress	
4) Elongation	



## **ADDITIONAL SPECIFICATIONS**

The contractor shall achieve that following requirements in respect of quantity of work and his contract rate shall provided for the same.

### **1.1 ADMIXTURES:-**

Whenever necessary the admixture should be used to achieved the required workability. The type of admixture should be got approved from Engineer-in-charge. The rate is inclusive of all admixtures etc. if found necessary.

### **1.2 CEMENT CONCRETE IN CONCRETE:**

For this purpose the conditions mentioned in additional specifications on **Page 115 to 121** shall be applicable.

### **1.3 WATER / CEMENT RATIO:**

For high quality concrete of low permeability, the water/cement ratio shall not be more than 0.45 and preferably 0.40 or less subject to the attainment of adequate workability.

### **1.4 CURING FOR CONCRETE:**

Special attention shall be paid to curing of concrete in order to ensure maximum durability and no minimize cracking. Concrete shall be cured with fresh water whenever it is possible to ensure that the concrete surface can be kept wet despite wind, etc. care shall be taken on avoid rapid lowering of concrete temperatures caused by applying cold water to hot concrete surface (thermal shock) Sea water shall not be used for curing reinforced concrete or prestressed concrete. Where there is doubt about the ability to keep concrete surface permanently wet for the whole of the curing period heavy duty membranes curing compound shall be used.

### **1.5 CONCRETE COVER TO REINFORCEMENT:**

- (i) The cover concrete must be of the same quality, impermeability and strength as the rest of the concrete. Special mix design should be carried out for the concrete to be used for making concrete cover blocks.
- (ii) The concrete cover must develop sufficient alkalinity, and protect the steel. The alkalinity developed shall not be less than 0.04 N and shall not more than 0.08 N.
- (iii) The cover must be uniform throughout and it's thickness shall be exclusive of plaster or other decorative finishes.
- (iv) The concrete cover shall be as per the relevant clause of IS codes. In the case of poles the cover thickness shall be separately decided by the Engineer in charge.
- (v)

### **1.6 DETAILING OF MISCELLANEOUS ITEM :**

**Binding Wires :** All ends of binding wires shall be carefully turned inwards so that they do not project out of concrete and start rusting action. Plastic coated galvanised wires shall be used. Wherever possible polythene binding string and polythene bar grips shall be used, after making

sure that these do not result in loss of bond or chemical reaction with concrete. The use is subject to approval of Engineer-in-charge.

**1.7 BAR SPACING** : As per relevant I.S. codes and as detailed design drawing or as directed by Engineer-in-charge.

**1.8 HOLLOWES IN CONCRETE:** After concreting is complete the concrete surface particularly where there is congestion of reinforcement, shall be tested by light hammering or if possible by Schmitz hammer. Any portion showing signs of hollowness should be grouted immediately.

**SPECIFICATION FOR FORMWORK AND STEEL, CENTERING :-**

**I) FORMWORK:-**

1.1 Formwork: - Formwork shall include all temporary forms of moulds required for forming the concrete which is cast-in-situ, together with all temporary construction required for their support. Unless otherwise stated all formwork shall conform to I.S. Specification.

1.2 Design of Formwork: - Formwork including complete false work shall be designed by the contractor in accordance with I.S.: 2750 (1964), 4041 (1987) and all other relevant I.S. codes without any extra cost to the Government and these shall be got approved from Engineer before any formwork is taken up.

1.3 The contractor shall entirely be responsible for the adequacy and safety for false work notwithstanding any approval or review by the Engineer of his drawing and design. Proprietary system of formwork if used a detailed information shall be furnished to the Engineer for approval.

**2. QUALITY OF SHUTTERING:** The shuttering shall have smooth and even surface and its joints shall not permit leakage of cement slurry.

2.1 Ply-board shuttering materials to be used shall be steel shuttering/marine plywood well seasoned free from projecting nails, splits or other defects that may mark on the surface of concrete. It shall not be so dry as to absorb water from concrete, or so green or wet as to shrink after erection. Mild steel plates or plywood shall be used for slab and beam bottoms.

2.2 The timber shall be accurately spawned planed on the sides and the surface coming in contact with concrete.

2.3 So far as practicable, clamps shall be used to hold the forms together. Where use of nails is unavoidable minimum number of nails shall be used and these shall be left projecting so that they can be easily with drawn. Use of double headed nails shall be preferred.

**3. TOLERANCE:-**

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

a) Section dimension = 5 mm

- b) Plumb = 1 in 1000 of height  
 c) Levels = 3 mm before any deflection takes place.

3.2 Tolerance given above are specified for local aberrations in the finished concrete surface and should not be taken as tolerance 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, Errors if noticed in any lift/ tilt 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.

4. **SPECIAL PROVISION:** - Whenever the concreting of thinner members is required to be carried out within shutters of considerable depth, temporary openings in the side of the shutters shall, if so directed by the Engineer be provided to facilitate the poring and consolidation of the concrete. Small temporary openings shall be provided as necessary at the bottom of shutters of walls and deep beams to permit the expulsion of rubbish etc.

5. **REMOVAL OF FORMWORK:** - The formwork shall be so removed that it shall not cause damage to concrete. Centring shall be gradually and uniformly lowered in such a manner as to avoid any shock or vibrations. Supports shall be removed in such a manner as to permit the concrete to take stresses due to its own weight uniformly and gradually.

The whole of the formwork removal should be planned and definite scheme of operation shall be worked out. Under no circumstances forms be struck until the concrete reaches a strength of at least twice the stress to which the concrete may be subjected at the time of striking but not before the period as mentioned in IS:456-2000 where ordinary Portland cement is used.

## II) **STEEL CENTERING:-**

1. **Work include :-** Erecting steel centering with contractor's material comprising of standard steel adjustable props and standard steel trusses / joists / spans, centering plate for bottom of slab and steel plates for bottom of beams etc. of adequate strength properly balanced for obtaining adequate rigidity to with stand all loads coming on it including permanent and temporary fixtures and fastenings etc. complete for R.C.C. member like beams slabs and canopy including its removal after the specified period, stacking making good the damaged parts / its replacement before its next use with all leads and lift (all centering material shall be contractor.)

2. For R.C.C. works formwork shall be of marine plywood of adequate thickness and grade only. The centering and supporting arrangement such as standard steel trusses/ joists/ spans standards adjustable/ fixed props. H type frames etc. shall be designed by the Contractor and approved from the Engineer before commencement of its erection. The Contractor with the prior approval of the Engineer shall use standard steel centering arrangement which may be manufactured by the reputed firm.

3. The supporting arrangement designed by the contractor shall conform to the relevant I.S. code and Standard practice adopted in this type of work. The centering arrangement shall be adequately braced and properly secured by using appropriate type of fastenings and fixtures to ensure stability and rigidity of the centering to withstand all loads coming on it. The entire responsibility for design, erection, maintenance and safety etc. will exclusively rest with the contractor. The Engineer reserves right to call detailed design calculations of the entire centering or part thereof to verify its stability and also reserve right to reject entire centering arrangement or part thereof and any material used for the centering in the event of which the contractor shall have to arrange for its replacement at his own cost.

**SPECIFICATIONS FOR CONCRETE WORKS:-**

**1 DESIGN OF CEMENT CONCRETE MIXES:**

- a) All the cement concrete of grade M-15 and higher strength shall be done with proper mix design as per IS: 10262 - 1982 and shall conform to the durability and other requirements of IS 456 2000. The mix design shall be got approved from the Executive Engineer from time to time whenever there is change in the source and type of cement and aggregates and change in the gradation of aggregates.
- b) The design of concrete mixes for various concrete items in the work shall be obtained by the contractor at his cost from and approved laboratory. The contractor shall submit in advance details of such design to the Engineer-in-charge for his prior approval.
- c) For concrete of Grade M-25/ M-30/M-35.  
Preliminary mix design must be carried out from an approved laboratory, for subsequent changes field mix design shall be acceptable. However in case the Executive Engineer has got difficulty in acceptance of the field mix design, laboratory mix design shall be got done by the contractor from approved laboratory at his own cost. Cement, fine aggregate and coarse aggregate must be used by weight only according to the requirement of the approved mix design.
- d) The concrete mix design shall give target strength of 1.33 times the working strength.
- e) The minimum size of aggregate permissible shall be as per Para A-7 of Page - 8 f of standard specification book of 1979 Edition Vol. 1.
- f) The provision of the specification No. B-7 at page - 38 to 40 of Vol. 1 1979 Edition of standard specification book for controlled concrete shall be applicable for all the structural concrete items. The maximum water cement ratio shall be 0.45. The mix design shall be done accordingly.
- g) All the expenses of preliminary mix design, subsequent field/ laboratory mix design, work tests, shall be borne by the contractor.

2. **FROMWORK FOR CONCRETE WORK:** - The forms of concrete shall be of the materials as directly by the Executive Engineer-in-charge and shall preferably be of steel or plywood, Forms shall be of the required shape, profile and lines. Suitable devices shall be used to hold corners, adjacent ends, edges of panel or other forms together in accurate alignment. The forms and joints shall tight enough. Forms used for circular curved or structures of unusual shape, petal dome etc. shall be of such a character that will result in smooth concrete surface and exact shape. They shall be prepared such that they will not warp or distort during erection or while placing concrete. Their design and layout shall be got approved form the Executive Engineer-in-charge in advance.
3. **ERECTION AND REMOVAL OF FORM WORK:** - The centering and strutting shall be of steel or plywood board exclusively for concreting. The design and drawing should be got approved in advance from the Department. For minor members the Engineer-in-charge may, at his discretion, permit use of wooden shuttering. The centering and shuttering shall be close and tight to prevent leakage of cement slurry. The centering shall have the necessary props, bracing and edges sufficiently strong and stable which shall not yield or displace while or after lying of concrete. They shall be made in such way that they can be slackened and removed gradually and slowly without distributing the concrete. Centering and shuttering shall not be removed before the design strength is achieved.
4. **MIXTURE OF CONCRETE:** - Design mix concrete as well as nominal mix concrete shall be mixed by following the provision in Standard specification at B. 6.4 unless otherwise directed by the Engineer.  
 Unless otherwise agreed by the Engineer concrete shall be mixed in a batch type mixer of such other type of mixer as the Engineer my approve.  
 During hot weather the Contractor shall ensure that the constituent materials are sufficiently cool to prevent the concrete from stiffening in the intervals between its discharge from the mixer and its final position.
5. **TRANSPORTATION, PLACING AND COMPACTION OF CONCRETE:** - The method of transportation placing and compaction of concrete shall be followed as per section B.6.6, 6.7 and 6.8 of Standard Specification unless otherwise directed by the Engineer. The compaction shall be done with surface float vibrators for slabs and with pin vibrators for columns and beams. Vibrators of adequate vibrating capacity shall be employed for all types of works.
6. **CURING:** - Curing shall be done by following provision of Section B.6.9 of Standard Specification and as directed by the Engineer.

7. **WORKING IN EXTREME WEATHER:** During windy weather sufficient protection shall be provided to prevent the cement from being blown away during the process of proportioning and mixing. During wet weather, the concrete shall be adequately protected as soon as it is placed in position.

No concreting shall be carried out during period of continuous heavy rains unless, it is completely covered during mixing, transporting and placing, In extreme hot weather, concreting shall be restricted to morning and evenings The time between mixing and placing of concrete shall be kept to the minimum and formwork shall be cooled by sprinkling with water.

8. **FINISHING:** Finishing work shall comply with requirement of section B.6.10 of Standard Specification unless otherwise specified herein below :

Immediately on removal of forms, the R.C.C. work shall be examined by the Engineer before any defects are made good.

- a) The work that has sagged or contains honey combing to an extent detrimental to structural safety or architectural concept shall be rejected.
- b) Surface defects of a minor nature shall be rectified generally as indicated below by the contractor.
  - i) Surface defects which require rectification when forms are removed usually consist of bulges due to movement of forms, ridges at form joints, honeycombed areas, damage resulting from the stripping of forms and bolt hole. Bulges and ridges shall be removed by careful chipping or tooling and the surface is then rubbed with a grinding stone. Honey combed and other areas shall be chipped out, the edges being cut as straight as possible and perpendicular to the surface, or preferably slightly under cut to provide a key at the edge, of the patch. Bolt holes shall be closed by cement mortar to ensure thorough filling.
  - ii) Shallow patches shall be treated with a coat of thin grout composed of one part of cement and one part of sand and then filled with mortar similar to that used in concrete. The mortar is placed in layers not more than 10 mm thick and each layer shall be given a scratch finish to secure bond with the succeeding layer. The last layer shall be finished to match the surrounding concrete by floating, rubbing or tooling on formed surfaces by pressing the form material against the patch while the mortar is still plastic.
  - iii) Large and deep patches requires filling up with concrete held in place by forms. Such patches shall be reinforced and carefully dowelled to the hardened concrete.
  - iv) The same amount of care to cure the material in the patches shall be taken for the whole structure. Curing shall be started, as soon as possible after the patch is finished

to prevent early drying. Damp Hessian cloth may be used. But in some locations it may be difficult to hold it in place, a membrane curing compound in these cases will be most convenient.

9. **CONSTRUCTIONS JOINTS:** Construction joints shall be provided and treated following the provisions of Specification and as directed by the Engineer-in-charge.
10. **DURABILITY:** - Minimum cement contents for different exposures and sulphate attack are given in Tables 4 and 5 of I.S. 456, 2000 shall be followed for design mix.
11. **TESTS AND STANDARD OF ACCEPTANCE:-**
  - 11.1 Tests and Standard of acceptance criteria of design mix concrete and nominal mix concrete shall be as follows:  
Sampling and testing of Concrete shall be done as per provision of section B.6.12 of Standard Specifications. Acceptance criteria for strength of concrete shall be as per IS 456-2000. Case falling outside the above limit shall be examined by the Engineer on Merits in each case.
  - 11.2 **DEFECTIVE CONCRETE :** Any concrete which gives substandard results, or is severely damaged due to cracking or shows excessive honey combing and exposure of reinforcement, if exhibits any fault which in the opinion of the Engineer, seriously impairs its function, may be declared as defective concrete. Such non acceptable concrete shall be removed from the site and replaced by fresh concrete of the specified quality by the contractor at his own expenses. Alternatively in case of acceptable concrete, the Contractor shall carry out whatever other remedy the Engineer may reasonably suggest "Small rendering shall be done by the Contractor without extra cost."
12. **KEEPING RECORDS:** The record of mix design, mixing, slump, testing of C.C. cubes etc. shall be maintained in accordance with Section B-6.13 of the Standard Specification.

## QUALITY ASSURANCE AND MAINTENANCE

To ensure the specified quality of work which shall also include necessary surveys, temporary works etc., and the contractor shall prepare a quality assurance plan and get the same approved from the **Engineer in charge** within eight days from the date of work order. For this, contractor shall submit an organization chart of his technical personnel to be deployed on the work along with their qualification, job descriptions defining the functions of reporting, supervising inspecting and approving. The contractor shall also submit a list of tools, equipment's and the machinery and instrumentation which he proposes to use for the construction and for testing in the field and/or in the laboratory and monitoring. The contractor shall modify/supplement the organization chart and the list of machinery, equipment etc. as per the direction of the Superintending Engineer and shall deploy the personnel and equipment on the field as per the approved chart and list respectively. The contractor shall submit written method statements detailing his exact proposals of execution of the work in accordance with the specifications. He shall get these approved from the **Engineer in charge**. The quality of the work shall be properly documented through certificates, records, check-lists and logbooks of results etc. Such records shall be compiled from the beginning of the work and be continuously updated and supplemented and this shall be the responsibility of the contractor. The forms should be got approved from the **Executive Engineer-in-charge**.

The contractor shall prepare detailed completion drawings after completion of the work. He shall also prepare and submit a maintenance manual giving procedure for maintenance, with the period of maintenance works including inspections, tools and equipment to be used, means of accessibility for all parts of the structure. He shall also include in the manual, the specifications for maintenance work that would be appropriate for his design and technique of construction. This manual shall be submitted within the contract period.



### **3 Agenda and work order book**

- 3.1 The Contractor shall himself manage the work or engage an authorized all time agent on the work capable of managing supervising and guiding the work and understanding the specifications and contract conditions. A qualified and experienced engineer be provided by the Contractor as his agent for technical matters in case the Engineer-in-charge considers this as essential for the work and so directs the Contractor. Agent will take orders as will be given by the Engineer-in-charge or his representative and shall be responsible for carrying them out. The agent and/or site engineer shall not be changed without prior intimation to the Engineer-in-charge or his representative on the wok site The Engineer-in-charge has the unquestionable right to ask for changes in the quality and strength of Contractors supervisory staff and to order removal from work of any of such staff. The Contractor shall comply with such order and effect replacements to be satisfaction of the Engineer-in-charge.
- 3.2 A work order book shall be maintained on site and it shall be the property of Government and the Contractor shall promptly acknowledge the order given therein by the Engineer-in-charge or his authorized representative or his superior officer and comply with them. The compliance shall be reported by Contractor to the Engineer-in-charge within 15 days from the date of issued of instructions. The blank work order book with machine numbered pages in quadruplicate with perforated sheets (for three copies to be detached) will be provided by the Departments for this purpose. The Contractor will be allowed to copy out the instructions therein from time to time.

### **4 Land for temporary use**

Land for temporary site office, site laboratory, parking yard, store yard, labour camp, Workshop etc. shall have to be arranged by the Contractor at his own cost. The department will extend help by providing recommendation letter etc. if necessary and so desire by the Contractor.

### **5 Assistance in procuring priorities permits etc.**

- 5.1 The Engineer-in-charge on written request by the Contractor, will if in his opinion the request is reasonable and in the interest of work and its progress assist the Contractor in securing the police protection and the priorities for deliveries, transport permits for controlled materials, permits for quarries and other similar permits including labour license etc. where such are needed. All cost in this behalf shall be borne by the Contractor. The department will not however be responsible for the non-availability of such facilities or delays in this behalf and no claims on account of such failure or the Department shall allow delays.

The Contractor has to make his own arrangement for machinery required for the work. However if such machinery is conveniently available with the department it may be spared on hire as per department's rules in force, if requested by the Contractor in writing. The supply or non-supply of machinery shall not form a ground for any claim or extension of time limit for this work.

### **5.2 Water supply**

- i) Availability of adequate water for work and sources thereof shall be confirmed by the Contractor before submitting the tender.

- ii) Water for construction, curing or any other purpose shall be brought by the Contractor at his own cost.

### **5.3 Electricity**

The Contractor will have to make his own arrangement at his own cost for obtaining or providing electric supply at Work site. Electrical supply for the department's use at work site shall be provided by the Contractor. No charges would be payable by the Department.

### **5.4 Telephone Facilities**

Contractor will have to make his own arrangement at his own cost of telephone facilities at work site, if required

## **6 Quarries**

The Contractor will have to make his own arrangement of acquiring land for quarries. The Contractor shall carry out all quarrying operations without endangering the environment and natural beauty of surrounding. All excess and unuseful excavated materials shall be stacked at dumping places if available identified by the Department as directed by the Engineer-in-charge otherwise the Contractor has to make his own arrangement for the same.

### **Supervisory staff**

The Contractor shall at his own expenses maintain sufficient experienced supervisory staff etc. required for the work and shall make his own arrangement for housing such staff.

## **8 Co-ordination**

When several agencies for different sub Works of the project are to work simultaneously on the project site, the Contractor shall render full co-ordination for achieving proper co-ordination between different Contractor to ensure timely completion specified in each contract shall therefore be strictly adhered to each Contractor may make his independent arrangements for water power, housing etc. but he will be at liberty to come to mutual agreement with the approval of the Engineer-in-charge. The Contractor shall not take or cause to be taken any steps of action that may cause disruption, discontent or disturbance to work, labour or other arrangements etc. of other Contractors in the project localities. Any action by the Contractors which the Engineer-in-charge in his unquestioned discretion may consider as infringement of the above code would be considered as a breach of the contract conditions and shall be dealt with accordingly. In case of any dispute or disagreement between the various Contractors, the Engineer-in-charge's decisions regarding the coordination, co-operation and facilities to be provided by any of the Contractor shall be final and binding on the Contractor concerned and such a decision or decision shall not violate any contract nor absolve the Contractor of his obligations under the contract, nor form the ground for any claim or compensation.

## **9 Relation with public authorities**

The Contractor shall comply with all rules, regulations, by laws and directions given from time to time by any local or public authority or body in connection with this work and shall him self pay fees or charges which are livable on him without any extra cost to Government.

## **10 Work preliminaries**

The Contractor shall supply, fix and maintain at his own cost, during the execution of Works, all the necessary centering and scaffoldings, staging, planking, timbering strutting, shoring, plumbing, fencing hoardings, watering, lightening by night as well as the necessary equipment for protection of public and safety at any place adjacent to road and railway line. The Contractor shall remove any/or all such centering, scaffolding, staging planking and equipment when ordered to do so by the Engineer-in-charge and make good all matters and things disturbed during the execution of work to the satisfaction of the Engineer-in-charge.

## **11 Environmental Safeguards**

### **11.1 NOC for pollution control**

It is obligatory on the part of agencies to obtain the N.O.C. regarding Water (Prevention and control of pollution) Act 1974 and Air (Prevention and Control of Pollution) Act 1981 from the Maharashtra Pollution Control Board before starting Crusher/Hot Mix Plant for the work.

### **11.2 Environmental Safety**

The Contractor shall, throughout the part of agencies to obtain the N.O.C. regarding Water (Prevention and control of pollution) Act 1974 and Air (Prevention and Control of Pollution) Act 1981 from the Maharashtra Pollution Control Board before starting Crusher/Hot Mix Plant for the work.

### **12.0 Arrangement for traffic during construction**

The Contractor shall at all time carryout work on the highway in a manner creating least interference to the flow of traffic while consistent with the satisfactory execution of the same. For all the Works involving improvements to the existing highway, the Contractor shall in accordance with the directives of the Engineer, provide and maintain, during execution of the work, a passage for traffic either along a part of the existing carriageway under improvement. The Contractor shall take prior approval of the Engineer regarding traffic arrangements during construction in reference with drawing No. 2 & 3 on page 51 & 52 of Vol-II of Standard Contract Document.

## **A. Execution of Work**

## **13 Authorities**

### **13.1 Authorities of Engineer-in-charge**

- 13.1.1 Save in so far as it is legally or physically impossible the Contractor shall execute complete and maintain the Works in strict accordance with the contract under the directions and to the entire satisfaction of the Engineer-in-charge and shall comply with and adhere strictly to the Engineer-in-charge's instructions and directions on any matter (whether mentioned in the Contract or not) pertaining to this Work.

- 13.1.2 The Engineer-in-charge shall decide all questions which may arise as to quality and acceptability of materials furnished and work executed, manner of execution rate of progress of the work, interpretation of the plans and specifications and acceptability of fulfillment of contract to on the part of Contractor. He shall determine the amount and quantities of work performed and materials furnished and his decision and measurements shall be final. In all such matters and in any technical questions, which may arise touching the contract, his decision shall be binding on the Contractor.
- 13.1.3. The Engineer-in-charge shall have the power to enforce such decisions and orders if the Contractor fails to carry them out promptly. If the Contractor fails to execute the work ordered by the Engineer-in-charge, the Engineer-in-charge may give notice to the Contractor specifying a reasonable period therein and on the expiry of that period proceed to execute such work as may be deemed necessary and recover the cost thereof from the Contractor.

### **13.2 Authorities of the Engineer-in-charge's Representative**

- 13.2.1 The duties of the representative of the Engineer-in-charge are to watch and supervise the work and to test and examine the materials to be used for workmanship employed in connection with the work.
- 13.2.2 The Engineer-in-charge may from time to time in writing delegate to his representative any of the powers and authorities vested in the Engineer-in-charge and shall furnish to the Contractor a copy of all such delegations of powers and authorities.
- 13.2.3 Any written instruction of approval given by the representative of the Engineer-in-charge to the Contractor within the terms of such delegations (but not otherwise) shall bind the Contractor and the department as though, it had been given by the Engineer-in-charge, provided always as follows:
- a) Failure of the representative of the Engineer-in-charge to disapprove any work or materials shall not prejudice the power of the Engineer-in-charge thereafter to disapprove such work or materials and to order its putting down, removal or breaking up thereof.
  - b) If the Contractor is dissatisfied with any decision of the representative of the Engineer-in-charge, he shall be entitled to refer the matter to the Engineer-in-charge who shall there upon confirm, reverse or vary such decision.

## **14 Work Preliminaries**

### **14.1 Display of Work Information**

The two information sign boards in rectangular shape of size 2.45 x 1.2 0m made out of 3mm thick Aluminum sheet painted with one coat of zinc chromate staving primer and two coats of yellow stove enamel paint on front side and gray stove enamel paint on back side and border/messages/symbols etc. with cutout of while retro reflective sheeting of Engineering Grade including M.S .angle iron frame of 35 x 35 x 3mm and two M.S. angle iron post of size 65 x 65 x 6mm properly cross braced with angle iron of 50 x 50 x 5mm etc. duly painted with alternative black and white bands of 25cm in width including G.I. fixtures etc. and fixing the board in 1:4:8 concrete block of size 60 x 60 x 75 cm shall be fixed etc. and fixing the boards in 1.4.8 concrete block of size 60 x 60 x 75 cm shall be fixed on the site (each on one side). It

is incidental to the Work and no extra payment will be made to the Contractor.

#### 14.2 Omissions and Discrepancies

In case of errors omissions and/or disagreement between written and scaled dimension in drawings or between the drawings and specifications etc. the following order of preference shall apply.

- i) Between the actual scaled and written dimension or descriptions on a drawings the latter shall be adopted
- ii) Between the written or shown description or dimension in the drawing and the corresponding one in the specifications, latter shall apply.
- ii) Between the quantities shown in the schedule of quantities and those arrived at from the drawing the latter shall apply.
- iii) Between the quantities shown in the schedule of quantities and those arrived at from the drawing the latte shall apply.
- iv) In case of omissions and /or doubts or discrepancies in dimension or description of any item or specifications a reference shall be made to the Engineer-in-charge whose elucidation, elaboration or decision shall be considered as authentic. The Contractor shall be held responsible for any error that may occur in the work through lack of such reference and precaution.

#### 14.3 Temporary Diversions, Maintenance of Same and Traffic Management

In addition to provision made herein, it is stipulated that the Contractor shall construct, maintain and carry out the traffic management including the safety features, for all temporary diversions.

#### 14.4 Site office

The Contractor shall, for the purpose of supervision of Works & management of work schedule establish fully furnished site office having required floor area & amenities at the place as approved by the Engineer-in-charge. The Contractor shall provide the furniture as per the list as per MORT&H specification (fifth revision) Clause No. 120 as below.

#### LIST OF FURNITURE TO BE PROVIDED & MAINTAINED FOR ENGINEER'S SITE OFFICE

Sr. No.	Item	Specification	No. Reqd.
1	Executive Table (for the Engineer)	Make Godrej Model No. T-108 or equivalent	1 No.
2	Executive Chair (for the Engineer)	Make Godrej Model No. PCEH-701 or equivalent	2 No.
3	Table ( for site Engineer, Accountant and Head Clerk)	Make Godrej Model No.104/ or equivalent	4 No.
4	Ordinary chair type 1 (for Engineer, Accountant and Head Clerk and visitors)	Make Godrej Model No.CHR-6 or equivalent	6 No.
5	Table (for all other staff)	Make Godrej Model No. T-101 or equivalent	2 No.

6	Ordinary chair Type II (for all other staff and visitors)	Make Godrej Model No.CHR-6 or equivalent	2 No
7	Steel Cupboard 1980 mm x 915 mm x 485mm	Make Godrej Model No.1 Store wel plain or equivalent	4 No.
8	Steel Cupboard 1270 mm x 765mm x 440mm	Make Godrej Model Minor plain or equivalent	4 No.
9	Racks – 5 Tier 1800 mm x 900 mm x 375 mm	Made of slotted angles and M.S. sheets of Godrej make	4 No.
10	Water Cooler	Standard Make	1 No.
11	Air Cooler	Standard Make	4 No.
12	Ceiling Fans 1400 mm size	Ceiling fan shall be of approved	6 No.
13	Computer with Laser Printer	Dual Core -2 with all latest Hard ware	2 No.

#### 14.4 (A) FACILITIES.

- 14) Contractor should provide at his own cost, temporary site office in the form of A.C.Porta cabin with all required furniture cupboards etc including two computer, with internet facility colour printer, scanner for Govt. Engineers which will belong to contractor , after completion of project contractor may take out his property at his own.
- 15) During construction necessary precaution should be taken by contractor for security of the plot from enchorment dumping of debris etc..
- 16) Contractor should provide at his own cost, CCTV Camera system with 24 hour recording and internet facility.. All required access and password should provided to MMB officials for monitoring project activities.

For road and bridge works the site office will have to be established on Work Site only.

#### 14.5 Laboratory for Testing

The Contractor shall for the purpose of testing the materials establish a field laboratory of adequate floor area as approved by Engineer-in-charge. The Contractor shall provide all equipments and amenities as per the details mentioned in MORT& H specification clause No. 121.3.1

Note: The field laboratory shall either be established at plant Site or as directed by Engineer-in-Charge.

- 14.6 The Contractor will make arrangements to carry out various tests in the field laboratory established for this purpose. The 70% sample could be tested at the field laboratory and 30% samples shall be got tested in the Government laboratory or laboratory approved by the Engineer- in-charge. The charges of testing the material in Government or Government approved laboratory or recognized laboratory approved by Engineer- in-charge shall be borne by the Contractor only.
- 14.7 The material for which test can not be carried out at the field laboratory shall be tested at the Government laboratory approved by the Engineer- in-charge. The material which can not be tested at Government laboratory shall be tested at the recognized laboratory approved by the Engineer- in-charge in presence of the Engineer- in-charge or his authorized representative.

#### 15. Materials for use on Work

##### 15.1 General

- 15.1.1 The Contractor shall make his own independent investigations into the availability as well as suitability of the various materials required for construction.
- 15.1.2 The Contractor will have to make his own arrangement for procuring quarries or quarry permits. Necessary assistance for this will be extending by the Department if

desired.

- 15.1.3 All the material required for construction of work shall be brought by the Contractor at his own cost. The samples of material to be procured shall be got approved from the Engineer- in-charge. The material as per approved samples shall only be procured.

The Contractor shall submit periodically as well as on completion of work, an account of all materials brought by the Engineer- in-charge. The Contractor shall also furnish monthly account of materials. A separate register shall be maintained on Site for recording daily item wise receipt and consumption of cement, steel and bitumen used by him and item wise consumption of other materials used. This register shall be signed daily by the Contractor or his representative and representative of Engineer- in-charge.

- 15.1.5 The Contractor shall not transfer any material once brought at Work site without prior written permission from Engineer- in-charge and for bonafied reasons only.
- 15.1.6 Testing of all construction material shall be carried out as per required frequency and MORT& H specification clause No.903.3.1, 1000, 1600, 1700, 1900, 2200, 2700.
- 15.1.7 In case the materials brought by the Contractor become surplus owing to the change in the design for the work the materials should be taken back by the Contractor at his own cost after prior permission of the Engineer- in-charge.
- 15.1.8 The charges for conveyance of materials from the place of delivery to the site of work and the actual spot on work site shall be entirely borne by the Contractor. No claim on this account shall be entertained.

## **15.2 Cement**

- 15.2.1 The Contractor shall make his own arrangement for procurement of Cement required for the Work. The Cement shall be OPC Grade-43 conforming to IS 8222. The supply of cement shall be of brand approved by Engineer-in-Charge. The testing of cement so procured shall be carried out as per the frequency as mentioned in MORT & H specification clause No.1000. The testing charges will have to be borne by the Contractor.
- 15.2.2 Cement to be used on Works shall be as fresh as possible and shall be used as per I.S. Code from the date of manufacture.

## **15.3 Bitumen - Deleted**

## **15.4 Bitumen's Mixes - Deleted**

## **15.5 Cement Concrete**

- 15.5.1 The Contractor shall carry out all preliminary tests to work out grading and proportioning of aggregates in order to obtain and maintain uniform quality of work. The Contractor shall supply all materials, labour for preparing and testing samples as required by the Engineer-in-charge Unless otherwise specified in the detailed item wise specifications. The concrete cube shall be tested as per CI. 1716.2.4 The contractor shall also make field arrangements for slump test and bulmage of sand. The frequency of test as per Ministry's specification. The cubes shall be got tested as approved laboratory and the test results shall conform to the M.O.R.R.T. & H specifications (4<sup>th</sup> Revision) Clause No.1716.2.6 or as laid down in the specifications.

- 15.5.2 a) All concrete shall be machine mixed, either in a concrete mixer or in a batching and mixing plant as per specifications. No. hand mixing will be permitted. The mixer or the plant shall be at an approved location considering the proportions of the mixes and transportation means available with the Contractor.

b) Fro Controlled or High grade concrete, the grading of aggregate shall be got

approved from the Engineer-in-Charge. The correct proportions and the total quantity of water for the mix will be determined by means of preliminary test and shall be got approved from the Executive –in – Charge. However, such approval does not relieve the Contractor from his responsibility regarding the minimum strength requirements for Work. Test shall be taken in accordance with relevant codes and specifications

**15.5.3** Concrete shall meet with any other requirements as specified on the drawings or as directed by Engineer-in-charge. Additional requirements as regards overall limits of deleterious substances in concrete shall be as per M.O.R.T. & H specifications (Fifth Revision) Clause No.1704.4

**15.5.4** The Concrete shall be mechanically vibrated for proper water from 28 days after the time of its placement or as may be directed by the Engineer-in-charge. Alternate method of curing viz. steam curing, use of curing compound shall be got approved from Engineer-in-charge in writing before its application.

**15.3 Cement- for B.C.**

Cement to be used for the work shall comply of the following with the prior approval of Engineer- in-charge. Ordinary Portland Cement 43 grade only conforming to IS: 8112 shall be used in the item of B.C. as a filler and shall be from the same factory. Independent testing of cement used shall be done by the Contractor at site and in the laboratory approved by the Engineer- in-charge before use. Any cement with lower quality than those shown in manufacture's certificate shall be debarred from use.

**16 Patented devices**

Whether the Contractor desired to use any designed device, material or process covered by letter of patent or copy right, the right for such use shall be secured by suitable legal arrangement and arrangement with patent owner and the copy of their agreement shall be field with the Engineer- in-charge if so desired by the latter.

**17. Rejection of Material**

17.1 Any stock or batch of material (s) of which sample(s) does not conform to the prescribed test and quality shall be rejected by the Engineer- in-charge or his representative and such material(s) shall be removed from the site by the Contractor at his own cost. Such rejected material shall not be made acceptable by any modifications.

17.2 Material not corresponding in character and quality with approved samples will be rejected by the Engineer- in-charge or his representative and shall be removed form site by the Contractor at his own cost.

**18. Stacking, Storage & Guarding of Materials**

18.1.1 The stacking and storage of materials at site at shall be in such a manner as to prevent deterioration or intrusion of foreign matter and to ensure the preservation of their quality, properties and fitness for the work. Suitable precautions shall be taken by the Contractor to protect against atmospheric actions, fire and other hazard.

18.1.2 The materials likely to be carried away by wind shall be stored in suitable stores or with suitable barricades and where there is likelihood of subsidence of soil; heavy materials shall be stored on paved platforms. Suitable separating barricades and enclosures as directed by Engineer- in-charge shall be provided to separate various materials brought by Contractor.

18.2 The Contractor shall at his own expenses, engage watchmen for guarding the materials, plant, machinery and the work during day and night against any pilferage or damage and also for prohibiting trespassers.

18.3 No materials brought to the site shall be removed from the site without the prior approval of the Engineer- in-charge.



- 18.4 All constructional plant, provided by the Contractor shall, when brought on the site, be deemed to be exclusively intended for the construction and the Contractor shall not remove the same or any part thereof (save for purpose of moving it from one part of the site to another) without the consent in writing of the Engineer- in-charge who shall record the reasons for withholding the consent.
- 18.5 The materials shall not be stacked in place where it is liable to be damaged or lost due to traffic passing over or to be washed away by rain or floods, to be buried under the land slide etc. or slip down on embankment or hill side etc. No claims for any loss due to these and similar causes will be entertained.
- 18.6 Before stacking, the materials shall be free from all earth, rubbish, vegetable matter and other extraneous substance and in the case of metal, screened to gauge, if so directed when ready. It shall be collected/ stacked entirely clear of the roadway, on ground, which has been cleaned of vegetation and leveled. On high banks, ghat roads etc. where it may not be practicable to stack it entirely clear of the road way, it may be stacked with permission of the Engineer- in-charge, on berms in such a way as to cause minimum danger and obstruction to the traffic or as may be directed by him.
- 18.7 The material brought by the Contractor and dismantled material if any shall be so stacked as to allow the traffic on National Highway in smooth and undisturbed manner without any hindrances and as directed by Engineer- in-charge that the material stacked along the road side is causing hindrances to the through traffic or blocking the required working area then the such material will be ordered to be removed or shifted at the place directed by the Engineer- in-charge at the cost of the Contractor.

## **19 Supervision and Inspection of Work**

### **19.1 Supervision**

- 19.1.1 The Contractor shall either himself supervise the execution of the Works or shall appoint the competent agent approved by the Engineer- in-charge to act on his behalf. The intimation of appointment of such agent shall be communicated in writing to the Engineer- in-charge within 10 days of the date of issue of notice to proceed with the work.
- 19.1.2. Orders given to the Contractor's agent shall be considered to have the same force as if these had been given to the Contractor himself. If the Contractor fails to appoint suitable agent as directed by the Engineer- in-charge the Engineer- in-charge shall have full power to suspend the execution of the work until such date a suitable agent is appointed and the Contractor shall be responsible for the delay so caused to the Works and Contractor shall not be entitled for any compensation on this behalf.

### **19.2 Inspection**

- 19.2.1 The Engineer- in-charge and or any person authorized by him shall at all times have access to the Works or part thereof and to all Workshops and places (including required documents) where work is being prepared or from where materials, manufactured articles or machinery are being obtained for the Works and the Contractor shall offer every facility for and every assistance in or in obtaining the right to such access.
- 19.2.2 The Contractor shall inform the Engineer- in-charge in writing when any portion of the work is ready for inspection giving him sufficient notice to enable him to inspect the same without affecting the further progress of the work.
- 19.2.3. The Contractor shall provide at his own cost necessary ladders and such arrangements as are considered safe by the Engineer- in-charge for proper inspection of all parts of the work.

- 19.2.4 The Contractor shall extend his full co-operation and make all necessary arrangement when needed for carrying out inspection of the work or any part of the work by the local representatives, M.L.A., M.P. and officers etc. No compensation shall be paid to the Contractor on this account.

## **20 Measurement of Works**

- 20.1 Initial Measurement for Record.
- 20.1.1 Where for proper measurement of the work, it is necessary to have an initial set of levels or other measurement taken, the same as recorded in the authorized field book or Measurement book of Government by the Engineer- in-charge or his authorized representative will be signed by the Contractor who will be entitled to have a true copy of same made at his cost.
- 20.1.2 Any failure on the part of the Contractor to get such level etc. recorded before starting the work will render him liable to accept the decision of the Engineer- in-charge as to the basis of taking measurements.
- 20.1.3. The Contractor will not cover any work which will render its subsequent measurement difficult or impossible without first getting the same jointly measured by himself and the authorized representative of the Engineer- in-charge. The record on the Government side of such measurement will be signed by the Contractor and he will be entitled to have a true copy of the same made at his cost.
- 20.2 Intermediate and Final Measurements
- The General rules for intermediate & final measurement for payment shall conform to the provision mentioned in clause 113 of MORT&H specifications 5<sup>th</sup> Revision

## **21 Completion of Work**

- 21.1 The Contractor after completion of work shall clean the site of all debris and remove all unused materials other than those supplied by the department and all plant and machinery, equipment, tools etc. belonging to him within one month from the date of completion of the work, or otherwise the same will be removed by the department at his cost or disposed of as per departmental procedure. In case the material is disposed off by department, the sale proceeds will be credited to the Contractors account after deducting the cost of sale incurred. However no claim of Contractor regarding the price of amount credited will be entertained afterwards.
- 21.2 The work shall not be considered to have been completed in accordance with the terms of the contract until the Engineer- in-charge shall have certified in writing to that effect. No approval of material or workmanship or approval of part of work during the progress of execution shall blind the Engineer- in-charge or in any way prevent him from even rejecting the work which is claimed to be completed and to suspend the issue of his certificate of completion until such alteration and modification or reconstruction have been effected at the cost of the Contractor as shall enable him to certify that the work has been completed to his satisfaction.
- 21.3 After the work is completed the Contractor shall give notice of such completion to the Engineer- in-charge and within 30 days of receipt of such a notice the Engineer- in-charge shall inspect the work and if there is no defect in the work, shall furnish the Contractor with certificate indicating the date of completion. However, if there are any defects which in the opinion of the Engineer- in-charge are rectifiable he shall inform the Contractor the defects noticed. The Contractor after rectification of such defects shall then inform the Engineer- in-charge and Engineer- in-charge on his part shall inspect the work and issue the necessary completion certificate within 30 days if the defects are rectified to his satisfaction and if not he shall inform the Contractor indicating defects yet to be rectified. The time cycle as above, shall continue.
- 21.4 In case defects noticed by the Engineer- in-charge which in his opinion are not rectifiable but otherwise work is acceptable at reduced payment, work shall be treated as completed. In such cases completion certificate shall be issued by the Engineer- in-

charge within 30 days indicating the unrectifiable defects for which specified reduction in payment is being made by him.

- 21.5 The completion certificate shall not be issued until the site is thoroughly cleaned and cleared off all unwanted material
- 21.6 On completion of work in all respects necessary certificate will be issued by the Engineer- in-charge and defect liability period will be counted from the date of issue of such certificate.
- 21.7 **Completion drawing**

The Contractor shall submit to the Engineer- in-charge within 2 (two) months of actual completion "Completion Drawing" as specified below and operation and maintenance instruction for the whole of the work.

These drawings shall be accurate and correct in all respect and shall be shown to and approved by the Engineer- in-charge. For "Completion" drawing 2 (Two) prints and one polyester film of quality approved by the Engineer- in-charge or his representative shall be supplied.

## **21.8 Supply of Color Record Photographs and Albums**

- 21.8.1 The Contractor shall arrange to take colour photograph at various stages / faces of the Works including interesting and novel features of the work as desired by the Engineer-in-charge needed for authentic documentation as desired. The photographs shall be of acceptable quality and they shall be taken by professionally competent photographer with camera having the facility to record the date of photographs taken in the prints and negative /C.D. The Contractor shall supply two color prints of each of the photographs taken to the standard 4'' x 6'' size mounted in albums of acceptable quality along with C.D. Also the negative in 35mm. size for each photograph or in C.D. shall be supplied. Each photograph in the album shall be suitably captioned. It shall be considered as incidental to the work and no additional payment whatsoever will be made for the same.

### **21.8.2. Videography**

Contractor shall supply video films/video C.D./Digital Photograph before stating of work, during execution and completed work of important activities of the work as directed by Engineer- in-charge during currency of the project and editing them to a video film / CD of playing time not less than 90 minutes and up to 180 minutes as directed by Engineer- in-charge. Such as film shall be suitably narrative and titled indicating chainage, activities. The video cassette / CD shall be of acceptable quality and shall be capable of producing colored pictures. This is incidental to work and no payments shall be made for the same.

## **22 Handing over of Work**

- 22.1 All the work and material before finally taken over by Government will be the entire liability of the Contractor for guarding, maintaining and making good any damaged of any magnitude. Interim payments made for such work will not alter this position.
- 22.2 The handing over by the Contractor and taking over by the Engineer- in-charge or his authorized representative will always are writing of which copies will go to the Engineer-in-charge and the Contractor. It is however understood that before taking over such Works Government will not put it into regular use as distinct from casual or incidental one,

except as specifically mentioned elsewhere in this contract, or as mutually agreed to.

### **22.3 Indemnity**

The Contractor shall indemnify the Government against all action, suits, claims and demands brought or made against it in against of anything done or committed to be done by the Contractor in execution of or in connection with the work of this contract and against any loss or damages to the Government in consequences to any action or suit being brought against the Contractor for anything done or committed to be done in the execution of the work of this contract. The Government may, at its discretion and entirely at the cost of Contractor, defend such sit either jointly with the Contractor or single, in case the latter chooses not to defend the case.

### **23 Amenities to Department - Deleted**

### **24 Maintenance During Contract Period**

- 24.1.1 The section of road in which the work lies shall be deemed to be handed over on Date of Work Order (in respect of repairs to pot holes formed during agreement period). Notwithstanding whether the agency has tackled some length or otherwise the responsibility of maintaining the complete length covered under the scope of work will be with the agency only. The agency shall get the potholes filled as per the directions of the Engineer- in-charge and ensure that the road remaining traffic worthy. The Contractor shall maintain the finished surface of the road for a period up to Defect Liability Period without any extra cost to the Government irrespective of the designs standards and specifications and actual traffic etc.
- 24.1.2 All damages during execution shall be made good by the Contractor at his own cost. He will be responsible for any damages to the road surface including B.T. surface in rainy seasons and during construction and guaranteed maintenance period and no separate payment will be made for restoring such damages.
- 24.1.3. Defective work is liable to rejected at any stage. The Contractor on no account shall refuse to rectify the defects merely on reasons that further work has been carried out. No extra payment shall be made for such rectification.

### **24.2 During Defect Liability Period**

- 24.2.1 Defect Liability shall mean the obligation of Contractor to undertake the following Works as per the specifications, to the satisfaction of Engineer- in-charge.
- a.** To complete any work which is outstanding in date stated in Taking Over Certificate within a stipulate d time as directed by Engineer- in-charge and
  - b.** To execute all work required to remedy defects or damage as may be as notified by Engineer- in-charge on or before the expiry date of the defects notified by the Engineer- in-charge for the Works or sections as the case may be. If a defect appears or damage occurs the Contractor shall be notified accordingly by the Engineer- in-charge or his authorized representative on his behalf. The Contractor shall remedy the defects/ damages notified to him within a time period as stipulated by Engineer- in-charge. If the Contractor fails to remedy/ rectify the defects or damages by this notified date, it shall be executed at the risk and cost of Contractor.
- 24.2.2 The Contractor has to commence the remedying work as soon as possible and in any case not later the 3 days of its communication by the Engineer- in-charge and complete the same within 7 days maximum or in a time period as directed by Engineer- in-charge. In case the Contractor fails to start the remedying work within above specified period, the department will take necessary action to carry out such Works at the risk and cost of the Contractor and the amount so incurred will be recovered from the Contractor from any such amount payable to the Contractor by the Government or though the deposit available with the department and even as recovery

of land revenues if necessary.

- 24.3 The agency will have to make all necessary arrangements for smooth flow of traffic till the time the remedying rectification work is completed or also this will be done by the department at the risk and cost of Contractor. The Contractor's liability of maintaining the road to the required specifications will commence right from the date of issue of notice to proceed with the work till the expiry of defect liability period. The extends to the untracked portion of work also.

**24.4 Visit of Contractor During Defect Liability Period**

Contractor shall carry out one inspection in every 3 months during the first year after completion of the work and carry minimum 2 inspections per year for the remaining 2 years of Defect Liability Period. However during rainy season the Contractor shall undertake such an inspection every month till the monsoon is over. The inspection shall be in the company of the representative of Engineer- in-charge. The defects noticed during the inspections shall be recorded and signed by the Contractor and representative of Engineer- in-charge. The Contractor shall rectify the defects if any, within 7 days or such period as may be notified by the Engineer- in-charge.

25. **Quality Control Tests:** -The contractor shall at his own cost set up Laboratory at site of work to carry out the testing of materials which are to be used for the work. This laboratory shall be approved by the Engineer-in-charge. The testing shall be done as per frequencies mentioned in the specification/additional specification of each item of Schedule 'B'. The 30% of the test included in Annexure 'A' (**On Page No. 107**) shall be carried out in Vigilance and Quality Control Laboratory at the cost of contractor and balance 70% in the site laboratory. The test which are not included in Annexure 'A' 50% test shall be carried out each in Vigilance and Quality Control laboratory and site laboratory. The frequency of testing of construction materials is mentioned in Annexure-**Bon Page No. 108 to 109**

**SECTION – 6**  
**FORM OF BID**

**FORM OF BID #**

**Description of the Work :-Construction of Proposed Office Building on Plot No. C-47 'G' Block at Bandra Kurla Complex (BKC) Mumbai at Maharashtra Maritime Board.**

**Chief Executive Officer,  
Maharashtra Maritime Board,  
Indian Mercantile Chamber, 3<sup>rd</sup> floor,  
Ramjibhai Kamani Marg, Ballard Estate,  
Mumbai-400 001.**

1. We offer to execute the works described above and remedy any defects therein in conformity with the conditions of contract, specification, drawings, Bill of Quantities and Addenda for the sum(s) of .....
2. We undertake, if our Bid is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer’s notice to commence and to complete the whole of the Works comprised in the Contract within the time stated in the document.
3. We agree to abide by this Bid for the period of **90** days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
4. Unless and until a format Agreement is prepare and executed this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
5. We understand that you are not bound to accept the lowest or any tender you may receive.
6. We accept the appointment of Shri. .... as the Dispute Review Expert.

(OR)

We do not accept the appointment of Shri. .... as the Dispute Review Expert and propose instead that Shri. .... be appointed as Dispute Review Expert, whose BIO-DATA is attached.

Dated this ..... day of ..... 20.....

Signature \_\_\_\_\_ in the capacity of \_\_\_\_\_duly authorised sign bids for and on behalf of ..... (in block capitals or typed)

Address

.....

Witness

.....

Address

.....

Occupation

.....

# Note-The bidder will submit this form online without his financial offer. The bidder shall fill the rates online in the BOQ sheet provided in the e-tender portal only.



**SECTION – 7**  
**BILL OF QUANTITIES**

**Refer Part-II**

**SECTION – 8**  
**SECURITIES AND OTHER FORMS**

**SECTION – 9**  
**DRAWINGS**

**Refer Part II**

**DOCUMENTS TO BE FURNISHED BY THE BIDDER**  
**(Attached)**

# Maharashtra Maritime Board



## STANDARD BIDDING DOCUMENT PROCUREMENT OF CIVIL WORKS

### PART-II COMPLETE BIDDING DOCUMENT

**NAME OF WORK :** Construction of Proposed Office Building on Plot No. C-47 'G' Block at Bandra Kurla Complex (BKC) Mumbai for Maharashtra Maritime Board

***E-TENDER***

***B-II TENDER FORM***

**GOVERNMENT OF MAHARASHTRA**

**AGREEMENT NO-----**

**NATIONAL COMPETITIVE BIDDING**  
**(CIVIL WORKS)**

<b>Name of work</b>	:	<b>Construction of Proposed Office Building on Plot No. C-47 'G' Block at Bandra Kurla Complex (BKC) Mumbai at Maharashtra Maritime Board</b>
<b>Tender Issue Date</b>	:	<b>Date. 05.03.2018 at 10.00 hrs</b>
<b>Time and date of pre-bid conference</b>	:	<b>Date. 26.03.2018 at 15.00 hrs, Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001.</b>
<b>Opening Date</b> <b><u>(If possible)</u></b>	:	<b>Date. 20.04.2018 at 12.00 hrs Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001</b>
<b>Officer inviting bids</b>		<b>Chief Executive Officer, Maharashtra Maritime Board, Indian Mercantile Chamber, 3<sup>rd</sup> floor, Ramjibhai Kamani Marg, Ballard Estate, Mumbai-400 001</b>

**SECTION 1 – INSTRUCTIONS TO BIDDERS (ITB)**

**Refer SECTION 1**

**Of**

**PART I**

**COMPLETE BIDDING DOCUMENT**

**SECTION – 3**  
**CONDITIONS OF CONTRACT**  
**Refer SECTION - 3**  
**Of**  
**PART I**  
**COMPLETE BIDDING DOCUMENT**



**SECTION – 4**  
**CONTRACT DATA**  
**Refer SECTION - 4**  
**Of**  
**PART I**  
**COMPLETE BIDDING DOCUMENT**

**SECTION – 5**  
**TECHNICAL SPECIFICATION**  
**Refer SECTION - 5**  
**Of**  
**PART I**  
**COMPLETE BIDDING DOCUMENT**

**SECTION – 6**  
**FORM OF BID**

**FORM OF BID**

**Description of the Work :- Construction of Proposed Office Building on Plot No. C-47 'G' Block at  
Bandra Kurla Complex (BKC) Mumbai at Maharashtra Maritime Board**

**Executive Engineer,  
Maharashtra Maritime Board,  
Mumbai**

1. We offer to execute the works described above and remedy any defects therein in conformity with the conditions of contract, specification, drawings, Bill of Quantities and Addenda for the sum(s) of .....
2. We undertake, if our Bid is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Engineer's notice to commence and to complete the whole of the Works comprised in the Contract within the time stated in the document.
3. We agree to abide by this Bid for the period of 120 days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
4. Unless and until a format Agreement is prepare and executed this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
5. We understand that you are not bound to accept the lowest or any tender you may receive.
6. We accept the appointment of Shri. .... as the Dispute Review Expert.

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(OR)

We do not accept the appointment of Shri. .... as the Dispute Review Expert and propose instead that Shri. .... be appointed as Dispute Review Expert, whose BIO-DATA is attached.

Dated this ..... day of ..... 20.....

Signature \_\_\_\_\_ in the capacity of \_\_\_\_\_ duly authorised sign bids for and on behalf of ..... (in block capitals or typed)

Address  
.....

Witness  
.....

Address  
.....

Occupation  
.....

# Note-The bidder will submit this form online without his financial offer. The bidder shall fill the rates online in the BOQ sheet provided in the e-tender portal only.

**SECTION – 7**  
**BILL OF QUANTITIES**

## **BILL OF QUANTITIES**

### **Preamble**

1. The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, Conditions of Contract, Technical Specifications and Drawings.
2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates and prices tendered in the priced Bill of Quantities, where applicable and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.
3. The rates and prices tendered in the priced Bill of Quantities shall, except in so far as it is otherwise provided under the Contract, include all constructional plant, labour, supervision, materials, erection, maintenance, insurance, profit, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract.
4. The rates and prices shall be quoted entirely in Indian Currency.
5. A rate or price shall be entered against each item in the Bill of Quantities, whether quantities are stated or not. The cost of items against which the Contractor has failed to enter a rate or price shall deemed to be covered by other rates and prices entered in the Bill of Quantities.
6. The whole cost of complying with the provisions of the Contract shall be included in the terms provided in the priced Bill of Quantities and where no items are provided the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.
7. General directions and descriptions of work and materials are not necessarily repeated or summarized in the Bill of Quantities. References to the relevant sections of the contract documentation shall be made before entering rates or prices against each item in the Bill of Quantities.
8. The method of measurement of completed items of work for payment shall be in accordance with the specification for Road and Bridge Works published by the Ministry of Road Transport & Highways, (V<sup>th</sup> Revision) April 2013.
9. Errors will be corrected by the Employer for any arithmetic errors pursuant to Clause 29 of the Instructions to Bidders.
10. Rock is defined as all materials which, in the opinion of the Engineer, require blasting or the use of metal wedges and sledge hammers or the use of compressed air drilling for its removal and which cannot be extracted by ripping with a tractor of at least 150 kw with a single rear mounted heavy duty ripper.

**SCHEDULE OF MATERIALS**  
(To be Brought by the Contractor at his own cost )

**NAME OF WORK :-**

<b>Sr. No.</b>	<b>Item of work</b>	<b>Approximate Quantity to be brought</b>	<b>Unit</b>	<b>Remarks</b>



**SCHEDULE 'A'**

**NAME OF WORK :-**

**(Schedule of Materials to be supplied by the Department)**

Sr. No.	Item of Material	Approximate Quantity to be supplied	Unit	Rate at which the materials will be charged to the contractor		place of delivery
				In Figure	In Words	
		<b>Nil</b>				

- Note: 1) The persons or firm submitting the tender should see that the rates in the above schedule are filled up by the Executive Engineer on the issue of the form prior to submission of the tender.
- 2) Contractors will have to make arrangement themselves for securing structural steel under the permit to be obtained by themselves. Department will however tender necessary help to contractor.
- 3) Empty Tar drums are the property of department. If the Contractor has not returned empty tar drums to department recovery at the rate of Rs. 50/- per drum will be made from the contractor.
- 4) 40% of the empty cement bags issued to the contractor are to be returned to the department. Otherwise recovery at the rate of Rs. 5/- per bag will be made from the contractor.

## BILL OF QUANTITIES

### Schedule "B"

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
1.1.1	Item No.1: Excavation for foundation in earth, soil of all types, sand, gravel and soft murum, including removing the excavated material up to a distance of 50 m. beyond the building area and stacking and spreading as directed, dewatering, preparing the bed for the foundation and necessary back filling, ramming, watering including shoring and strutting etc. complete. (Lift upto 1.5 m.)	5478.78	Cum			
1.1.2	Excavation for foundation in earth, soils of all types, sand, gravel and soft murum, including removing the excavated material upto a distance of 50 metres beyond the building area and stacking and spreading as directed, dewatering, preparing the bed for the foundation and necessary back filling, ramming, watering including shoring and strutting etc. complete. (Lift from 1.5m to 3.0m)	5308.91	Cum			
1.1.3	Same as item No. 1.1.2 - Lift from 3.00m to 4.50m	5265.22	Cum			
1.1.4	Same as item No. 1.1.2 - Lift from 4.50m to 6.00m	5265.22	Cum			
1.1.5	Same as item No. 1.1.2 - Lift from 6.00m to 7.50m	2632.61	Cum			
1.1.6	Same as item No. 1.1.2 - Lift from 7.50m to 9.00m	1842.83	Cum			
1.1.7	Same as item No. 1.1.2 - Lift from 9.00m to 10.50m	1316.30	Cum			
1.1.8	Same as item No. 1.1.2 - Lift from 10.50m to 12.00m	50.00	Cum			
1.1.9	Same as item No. 1.1.2 - Lift from 12.00m to 13.50m	50.00	Cum			
1.2.1	Excavation for foundation in Soft rock and old cement or lime masonry foundations including removing the excavated material upto a distance of 50 metres beyond the building area and stacking as directed, including dewatering, preparing the bed for the foundation and necessary back filling with available earth /murum, ramming, watering including shoring and strutting etc. complete (lift upto 1.5m)	50.00	Cum			
1.2.2	Excavation for foundation in Soft rock and old cement or lime masonry foundations including removing the excavated material upto a distance of 50 metres beyond the building area and stacking as directed, including dewatering, preparing the bed for the foundation and necessary back filling with available earth/murum, ramming ,watering including shoring and strutting etc. complete. (Lift from 1.5m To 3.0 m.)	50.00	Cum			
1.2.3	Same as item No. 1.1.2 - Lift from 3.00m to 4.50m	50.00	Cum			
1.2.4	Same as item No. 1.1.2 - Lift from 4.50m to	50.00	Cum			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	6.00m					
1.2.5	Same as item No. 1.1.2 - Lift from 6.00m to 7.50m	789.78	Cum			
1.2.6	Same as item No. 1.1.2 - Lift from 7.50m to 9.00m	526.52	Cum			
1.2.7	Same as item No. 1.1.2 - Lift from 9.00m to 10.50m	526.52	Cum			
1.2.8	Same as item No. 1.1.2 - Lift from 10.50m to 12.00m	25.00	Cum			
1.2.9	Same as item No. 1.1.2 - Lift from 12.00m to 13.50m	25.00	Cum			
1.3.1	Excavation for foundation in Hard rock by chiselling, wedging, line drilling, etc. including trimming and levelling the bed, removing the excavated material upto a distance of 50 metres beyond the building area stacking as directed, dewatering and back filling with available earth/ murum watering, ramming etc. complete. (Lift upto 1.5 m).	50.00	Cum			
1.3.2	Same as item No. 1.3.1 - Lift from 1.50m to 3.00m	50.00	Cum			
1.3.3	Same as item No. 1.3.1 - Lift from 3.00m to 4.50m	50.00	Cum			
1.3.4	Same as item No. 1.3.1 - Lift from 4.50m to 6.00m	50.00	Cum			
1.3.5	Same as item No. 1.3.1 - Lift from 6.00m to 7.50m	1842.83	Cum			
1.3.6	Same as item No. 1.3.1 - Lift from 7.50m to 9.00m	2895.87	Cum			
1.3.7	Same as item No. 1.3.1 - Lift from 9.00m to 10.50m	3422.39	Cum			
1.3.8	Same as item No. 1.3.1 - Lift from 10.50m to 12.00m	2983.85	Cum			
1.3.9	Same as item No. 1.3.1 - Lift from 12.00m to 13.50m	536.76	Cum			
1.4	Providing preconstructional antitermite treatment as per I.S. 6313 (Part-I) to the soil along the external face of building by punching holes of 1.2 of 1.5 C.M. diametre about 30 -60 cm deep at 15 cm c/c as close to the wall as possible and to inject 0.5 percent of aldrin or clorophyrifos at the rate of 7.5 litres per hole and sealing the same with proper filling and covering 10 years guarantee on bond paper.	425.33	Sqm			
1.5	Filling in plinth and floors with contractors material/brought from outside and approved by Engineer incharge in layers of 15 cm to 20 cm including watering and compaction etc. complete.(Murum filling at Basement 3 level)	2539.8	Cum			
1.6	Providing dry/ trap/ granite/ quartzite/ gneiss rubble stone soling 15 cm to 20 cm thick including hand packing and compacting etc. complete.	364.17	Cum			
1.7	Providing and fixing pressure relief pipes of 100 mm diametre of AC / PVC as per drawing for R.C.C Raft, galaries returns, abutments, wing wall etc complete.	655	Rmt			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
2	<b>SH: 2 CEMENT CONCRETE WORK</b>					
2.1	Providing and laying Cast in situ/Ready Mix cement concrete in M15 of trap/granite/quartzite/gneiss metal for bed blocks, foundation blocks and such other items including bailing out water, plywood/steel formwork, laying/ pumping, compacting, roughening them if special finish is to be provided, finishing uneven and honeycombed surface and curing etc. complete. The Cement Mortar 1:3 plaster is considered for rendering uneven and honeycombed surface only. Newly laid concrete shall be covered by gunny bag, plastic, tarpaulin etc. (Wooden centering will not be allowed.), with fully automatic microprocessor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand - PCC below Raft & footing					
3	<b>SH: 3 REINFORCED CEMENT CONCRETE WORK</b>					
3.1	Providing and laying in situ/Ready Mix cement concrete M-20 of trap / granite /quartzite/ gneiss metal for R.C.C. work in foundations like raft, strip foundations, grillage and footings of R.C.C. columns and steel stanchions etc. including bailing out water, formwork, laying/pumping cover blocks, compaction and curing roughening the surface if special finish is to be provided (Excluding reinforcement and structural steel) etc. complete, with fully automatic microprocessor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand - (Grade slab at Basement 3 level)	287.57	Cum			
3.2	Providing and laying Cast in situ/Ready Mix cement concrete M-30 of trap / granite /quartzite/ gneiss metal for R.C.C. work in foundations like raft, strip foundations, grillage and footings of R.C.C. columns and steel stanchions etc. columns as per detailed designs and drawing or as directed including centering, formwork, cover blocks laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete. (Excluding reinforcement and structural steel). with fully automatic microprocessor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand (Compound wall - Strip footing)	38.652	Cum			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
3.3	Providing and laying Cast in situ/Ready Mix cement concrete M-40 of trap / granite /quartzite/ gneiss metal for R.C.C. work in foundations like raft, strip foundations,	Cum	1272.4			
	grillage and footings of R.C.C. columns and steel stanchions etc. columns as per detailed designs and drawing or as directed including centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete. (Excluding reinforcement and structural steel).with fully automatic microprocessor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand					
3.4	Providing and laying Cast in situ/Ready Mix cement concrete M-30 of trap / granite /quartzite/ gneiss metal for R.C.C. columns as per detailed designs and drawing or as directed including centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel). with fully automatic microprocessor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand	Cum	36.203			
3.5	Providing and laying Cast in situ/Ready Mix cement concrete M-40 of trap / granite /quartzite/ gneiss metal for R.C.C. columns as per detailed designs and drawing or as directed including centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel).with fully automatic microprocessor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand					
3.5.1	9th floor	191.93	Cum			
3.5.2	10th floor	191.93	Cum			
3.5.3	11th floor	191.93	Cum			
3.5.4	12th floor & above	328.77	Cum			
3.6	Providing and laying Cast in situ/Ready Mix cement concrete M-50 of trap / granite					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	/quartzite/ gneiss metal for R.C.C. columns as per detailed designs and drawing or as directed including centering, formwork,					
	cover blocks, laying/pumping, compaction finishing the formed surfaces with cement					
	mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete,(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand					
3.6.1	3rd, 2nd, 1st Basement floor	861.01	Cum			
3.6.2	Ground floor	409.28	Cum			
3.6.3	1 <sup>st</sup> floor	206.14	Cum			
3.6.4	2 <sup>nd</sup> floor	189.24	Cum			
3.6.5	3 <sup>rd</sup> floor	191.93	Cum			
3.6.6	4 <sup>th</sup> floor	191.93	Cum			
3.6.7	5 <sup>th</sup> floor	191.93	Cum			
3.6.8	6 <sup>th</sup> floor	191.93	Cum			
3.6.9	7 <sup>th</sup> floor	191.93	Cum			
3.6.10	8 <sup>th</sup> floor	191.93	Cum			
3.7	Providing and laying Cast in situ/Ready Mix cement concrete M-30 of trap / granite /quartzite/ gneiss metal for R.C.C. beams and lintels as per detailed designs and drawings or as directed including centering, formwork, cover blocks, laying/pumping, compaction and roughening the surface if special finish is to be provided and curing etc. complete. (Excluding reinforcement and structural steel).with fully automatic microprocessor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand (Compound wall beam)	22.005	Cum			
3.8	Providing and laying Cast in situ/Ready Mix cement concrete M-40 of trap / granite /quartzite/ gneiss metal for R.C.C. beams and lintels as per detailed designs and drawings or as directed including centering, formwork, cover blocks, laying/pumping, compactionand roughening the surface if special finish is to be provided and curing etc. complete. (Excluding reinforcement and structural steel). with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand					
3.8.1	3rd, 2nd, 1st Basement floor	67.33	Cum			
3.8.2	Ground floor	37.40	Cum			
3.8.3	1 <sup>st</sup> floor	158.38	Cum			
3.8.4	2 <sup>nd</sup> floor	158.38	Cum			
3.8.5	3 <sup>rd</sup> floor	250.55	Cum			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
3.8.6	4 <sup>th</sup> floor	250.55	Cum			
3.8.7	5 <sup>th</sup> floor	250.55	Cum			
3.8.8	6 <sup>th</sup> floor	250.55	Cum			
3.8.9	7 <sup>th</sup> floor	250.55	Cum			
3.8.10	8 <sup>th</sup> floor	250.55	Cum			
3.8.11	9 <sup>th</sup> floor	250.55	Cum			
3.8.12	10 <sup>th</sup> floor	250.55	Cum			
3.8.13	11 <sup>th</sup> floor	250.55	Cum			
3.8.14	12 <sup>th</sup> floor & above	272.38	Cum			
<b>3.9</b>	Providing and laying Cast in situ/Ready Mix cement concrete M-30 of trap/ granite / quartzite/ gneiss metal for R.C.C. slabs and landings as per detailed designs and drawings including centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete,(Excluding reinforcement and structural steel).with fully automatic microprocessor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand (OHT - Top/bottom slab)	28.37	Cum			
<b>3.10</b>	Providing and laying Cast in situ/Ready Mix cement concrete M-40 of trap/ granite / quartzite/ gneiss metal for R.C.C. slabs and landings as per detailed designs and drawings including centering, formwork, cover blocks, laying/pumping, compaction finishing the formed surfaces with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete,(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand (Raft slab, floor slab & UGT/STP top/bot slab)					
3.10.1	3rd, 2nd, 1st Basement floor	1498.99	Cum			
3.10.2	Ground floor	558.76	Cum			
3.10.3	1 <sup>st</sup> floor	151.44	Cum			
3.10.4	2 <sup>nd</sup> floor	151.44	Cum			
3.10.5	3 <sup>rd</sup> floor	261.14	Cum			
3.10.6	4 <sup>th</sup> floor	260.54	Cum			
3.10.7	5 <sup>th</sup> floor	260.54	Cum			
3.10.8	6 <sup>th</sup> floor	260.54	Cum			
3.10.9	7 <sup>th</sup> floor	260.54	Cum			
3.10.10	8 <sup>th</sup> floor	260.54	Cum			
3.10.11	9 <sup>th</sup> floor	260.54	Cum			
3.10.12	10 <sup>th</sup> floor	260.54	Cum			
3.10.13	11 <sup>th</sup> floor	260.54	Cum			
3.10.14	12 <sup>th</sup> floor & above	128.87	Cum			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
3.11	Providing and laying Cast in situ/Ready Mix cement concrete in M-30 of trap/ granite/ quartzite/ gneiss metal for R.C.C. pardi of required thickness including centering, formwork, cover blocks, laying/pumping, compacting and roughening them if special finish is to be provided and curing complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand (For OHT Wall)	31.152	Cum			
3.12	Providing and laying Cast in situ/Ready Mix cement concrete in M-40 of trap/ granite/ quartzite/ gneiss metal for R.C.C. pardi of required thickness including centering, formwork, cover blocks, laying/pumping, compacting and roughening them if special finish is to be provided and curing complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand (For Retaining Wall & UGT/STP Wall)	1039.8	Cum			
3.13	Providing and laying Cast in situ/Ready Mix cement concrete in M-50 of trap/ granite/ quartzite/ gneiss metal for R.C.C. pardi of required thickness including centering, formwork, cover blocks, laying/pumping, compacting and roughening them if special finish is to be provided and curing complete.(Excluding reinforcement and structural steel).with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand (For Car Lift)	100.83	Cum			
3.14	Providing and laying Cast in situ/Ready Mix cement concrete in M-40 of trap / quartzite /granite /gneiss metal for R.C.C. Waist slab, and steps of staircases as per detailed design and drawings or as directed including steel centering, plywood/ steel formwork, steel props, laying/pumping, compaction, finishing uneven and honeycombed surface with C.M. 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening the surface if special finish is to be provided and curing etc. complete. (Excluding reinforcement, including cover block).(Newly laid concrete shall be covered by gunny bag, plastic, tarpaulin etc.) with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	sand/V.S.I. quality Artificial Sand					
3.14.1	3rd, 2nd, 1st Basement floor	17.054	Cum			
3.14.2	Ground floor	5.685	Cum			
3.14.3	1st floor	5.685	Cum			
3.14.4	2nd floor	5.685	Cum			
3.14.5	3rd floor	5.685	Cum			
3.14.6	4th floor	5.685	Cum			
3.14.7	5th floor	5.685	Cum			
3.14.8	6th floor	5.685	Cum			
3.14.9	7th floor	5.685	Cum			
3.14.10	8th floor	5.685	Cum			
3.14.11	9th floor	5.685	Cum			
3.14.12	10th floor	5.685	Cum			
3.14.13	11th floor	5.685	Cum			
3.14.14	12th floor	5.682	Cum			
3.15	Providing and fixing in position TMT - FE - 500 bar reinforcement of various diameters for R.C.C. pile caps, footings, foundations, slabs, beams columns, canopies, staircase, newels, chajjas, lintels pardis, copings, fins, arches etc. as per detailed designs, drawings and schedules. Including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required complete.					
3.15.1	3rd, 2nd, 1st Basement floor	540.71	MT			
3.15.2	Ground floor	157.51	MT			
3.15.3	1st floor	75.13	MT			
3.15.4	2nd floor	71.24	MT			
3.15.5	3rd floor	72.96	MT			
3.15.6	4th floor	72.92	MT			
3.15.7	5th floor	72.47	MT			
3.15.8	6th floor	71.00	MT			
3.15.9	7th floor	70.55	MT			
3.15.10	8th floor	70.55	MT			
3.15.11	9th floor	68.63	MT			
3.15.12	10th floor	68.63	MT			
3.15.13	11th floor	65.02	MT			
3.15.14	12th floor & above	100.82	MT			
<b>4.0</b>	<b>SH: 4 STEEL WORKS</b>					
4.1	Providing and fabricating structural steel work in rolled sections like joists, channels, angles, tees etc. as per detailed design and drawings or as directed including cutting, fabricating, hoisting, erecting, fixing in position making riveted / bolted /welded connections without connecting plates, braces etc. and including one coat of anticorrosive paint and over it two coats of oil painting of approved quality and shade etc. complete.	21.15	MT			
4.2	Providing and applying two coats of synthetic enamel paint of approved colour to new /old structural steel work and wood work in buildings, including scaffolding if necessary, cleaning and preparing the surface (excluding primer coat) etc. complete.	317.26	Sqm			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
<b>5.0</b>	<b>SH: 5 POST TENSIONING WORKS</b>					
5.1	Designing, Providing and installing Post tensioning tendon & anchorage system as per IS 1343-1980 for slabs and Beams using Galvanized steel strip ducting	146.36	MT			
	including (a) preparation of post-tensioning shop drawings and getting the same approved by the structural consultant and proof consultant as decided by Engineer-in-charge (b) supplying, fabricating and fixing of steel bar chairs and anti-bursting and anti-spalling reinforcement (c) stressing of tendons with jacks equipped with hydraulic seating system for permanent wedges (d) grouting the same using cementitious Grout with necessary admixture having 28 day compressive strength of 32 N/mm <sup>2</sup> with maximum water cement ratio as 0.45 (e) patching/concreting of anchorage system left out after stressing ends all complete as per the design requirements supplied and as per direction of Engineer-in-Charge.					
	(For the purpose of payment length of strands shall be measured only from outer face of concrete member at one end to outer face of concrete member at another end. Extra length of strands provided on both the ends shall not be measured and paid. Steel bar chairs, anti-bursting and anti-spalling reinforcement and other reinforcement bars shall be measured and paid under relevant item of reinforcement bars. Concrete for patching of anchorage system left out after stressing shall be paid under relevant item of concrete.)					
	Using 12.7mm dia 7-ply class II Uncoated Stress relieved strands conforming to IS: 14268-1995 and approved post tensioning anchorage system.					
<b>6.0</b>	<b>SH: 6 WATERPROOFING WORKS</b>					
	<b>Basement Membrane Waterproofing</b>					
	Providing and applying waterproofing treatment with Fully Bonded HDPE Membrane Waterproofing on PCC below raft slab & SBS membrane on retaining wall (approved system : as per manufacturer's specification)					
	Important Note -					
	Membrane should be supplied with original manufacturer's Material Test Certificate (MTC) & membrane should be installed in strict accordance with original manufacturer's instructions (private label supplier are not allowed) and contractor should produce method statement from original product manufacturer.					
<b>6.1</b>	Waterproofing for Raft & Retaining Wall					
	Specifications - Supplying & Installing waterproofing treatment by using 1.2 mm thick Nuraprufe 415 manufactured by M/s.					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Hitchins before casting of the base RCC slab. The pre-applied membrane gets bonded to the underneath of the poured concrete used as base slab. The membrane shall consist of a thick HDPE					
	film, a highly aggressive pressure sensitive adhesive and weather resisting coating which bonds integrally to poured concrete of base slab. The membrane shall conform to basement waterproofing protection to grades 2, 3 & 4 as defined in BS 8102:2009. The waterproofing membrane shall have following minimum properties :					
	a) Resist hydrostatic pressure of up to 70 m head of water as per ASTM D5385;					
	b) Puncture Resistance of 990 N (as per ASTM E154)					
	c) Elongation of 300 % (as per ASTM D412)					
	d)Tensile strength of 27.6 Mpa (as per ASTM D412)					
	The membrane shall be installed with standard 75 mm selvedge laps and 75mm end laps taped with Nuraprufe Tape, a double side coated adhesive tape over the entire area and turned up on to a vertical timber formwork, as per recommendations / drawings. The membrane shall be laid over the concrete blinding having smooth dried surface including necessary removal of release liner while applying, necessary overlaps between the membranes and fixing overlaps by Nuraprufe tape, firm rolling onto the surface to get a tight seal, etc. complete all as per manufacturer's recommendations, etc. complete with all lead and lift for all materials and labour and as directed, at all heights and all locations viz. below the slab. The scope of work shall include treatment of Pressure Release Pipes in accordance to the method statement as per manufacturer specifications viz. wrapping the Pressure release pipe with waterproofing membrane sheet up to 300 mm height and treating the same with Liquid Membrane around the periphery of the pipe.					
6.1.1	Below raft slab	2563.1	Sqm			
6.1.2	For retaining wall	1973.6	Sqm			
	Sealing of Dowel Anchor penetration : -The 32mm dia. Dowel anchor penetration will be sealed all around on the membrane with 2 component liquid membrane. All system to be installed as per manufacturer's recommendations, etc. complete with all lead and lift for all materials and labour and as directed by Engineer in-charge.	1140	No.			
6.1.1	Below raft slab	2563.1	Sqm			
6.1.2	For retaining wall	1973.6	Sqm			
	Sealing of Dowel Anchor penetration : -The 32mm dia. Dowel anchor penetration will	1140	No.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	be sealed all around on the membrane with 2 component liquid membrane. All system to be installed as per manufacturer's recommendations, etc. complete with all lead and lift for all materials and labour and as directed by Engineer in-charge.					
<b>6.2</b>	<b>Liftpit Waterproofing</b>					
	Treatment to Lift slab : The waterproofing material to be used shall be Vandex BB75 a cementitious based in depth penetrative waterproofing system for concrete by way of slurry application. After application of the Vandex BB75 waterproofing material, it shall react with the free lime and moisture within the capillary tracts of the concrete, to form insoluble gel crystals that penetrate deep into the concrete. These insoluble crystals formed shall permanently block the capillaries and minor cracks that are present in the concrete, and driving out water, to provide a permanently waterproofed concrete. The compound of active chemicals, while in the absence of moisture shall remain dormant and re-activate once the concrete structure is re-exposed to moisture or water.	904.82	Sqm			
	Treatment to Lift Walls : Cleaning the surface thoroughly, providing and applying Vandex BB75 waterproofing system in two coats by toweling as per manufacturer's specifications. The 1st coat of BB 75 shall be applied to the prepared surface at coverage of 1.5 kg/sqmt. Whilst the 1st coat is still "green" a second coat comprising of vandex BB 75 at a coverage of 1.5 kg/Sqmt. The slurry coatings shall be applied with a stiff masonry brush or stiff broom and worked into every irregularity on the surface shall be done by means of toweling or by spray only. Treatment to floor slabs shall be carried out by trowel application in 3.0 kg/Sqmt coverage of Vandex BB 75 using a steel trowel into hardened concrete slab surface including curing, cleaning etc complete.					
<b>6.3</b>	<b>Water Retaining Structures (U.G / STP / OH Tank)</b>					
<b>6.3.1</b>	Treatment to concrete defects like Construction Joints, Cold Joints, Honey Combs & Porous Concrete. All construction joints, honey combs, cold joints, of concrete shall be treated by hacking and opening the affected area till sound concrete, fixing nozzles and grouting the same, under pressure with cement slurry mixed with plasticizer non shrink additive and sealing all the construction joints with non-shrink mortar.	463.71	Sqm			
	Cleaning the surface thoroughly, providing and applying Vandex BB 75 waterproofing system in two coats by trowelling as per manufacturer's specifications. The 1st coat					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	of BB 75 shall be applied to the prepared surface at coverage of 1.5 kg/sqmt. Whilst the 1st coat is still "green" a second coat comprising of Vandex BB75 at a					
	coverage of 1.5 kg/Sqmt shall be applied. The slurry coatings shall be applied with a stiff masonry brush or stiff broom and worked into every irregularity on the surface by means of toweling or by spray only. Treatment to floor slabs shall be carried out by trowel application in 3.0					
	kg/Sqmt coverage of Vandex BB75 using a steel trowel into hardened concrete slab surface including curing, cleaning etc. complete.					
<b>6.3.2</b>	<b>Protection Treatment</b>					
	Providing and laying a protection screed layer of 30 mm thick to the floor and 20 mm thick plaster in C: M 1:4 over waterproofing membrane for protection.	463.71	Sqm			
<b>6.3.3</b>	<b>Food Grade Epoxy Coating:-</b>					
	Providing and applying 2 coats of ECW 130 or equivalent, epoxy coating by mixing 2 components using slow speed heavy duty drilling machine fixed with mixing paddle, applying first coat using brush or roller and allowing it to dry for 16-18 hrs, applying second coat and allowing it to dry completely, etc and complete as per manufacturer's specification. [The properties of membrane are:- Pot life : 30 min; Mixed density : 1.45 – 1.55 Gms/ml at 27° C; Time between the coats : 6-8 Hrs; Walkability : 24 Hrs; Full cure : 7 days; Bond strength : > 1.5 N / Sqmm; Dry film thickness : 130 microns;]	337.39	Sqm			
<b>6.4</b>	<b>Toilet Waterproofing</b>					
<b>6.4.1</b>	Providing water proof bedding for flooring of Bath and WC 25 mm thick in C.M. 1:3 including using approved water proofing compound in specified proportion as per manufacturers specifications for per bag of cement including leveling, curing and covering 10 years guarantee on court fee stamp paper of Rs.500/- including ponding test etc. complete.					
<b>6.4.1.1</b>	1st Basement floor	11.33	Sqm			
<b>6.4.1.2</b>	Ground floor	48.40	Sqm			
<b>6.4.1.3</b>	1st floor	59.85	Sqm			
<b>6.4.1.4</b>	2nd floor	59.85	Sqm			
<b>6.4.1.5</b>	3rd floor	67.55	Sqm			
<b>6.4.1.6</b>	4th floor	67.55	Sqm			
<b>6.4.1.7</b>	5th floor	48.30	Sqm			
<b>6.4.1.8</b>	6th floor	59.64	Sqm			
<b>6.4.1.9</b>	7th floor	59.64	Sqm			
<b>6.4.1.10</b>	8th floor	59.64	Sqm			
<b>6.4.1.11</b>	9th floor	69.01	Sqm			
<b>6.4.1.12</b>	10th floor	67.57	Sqm			
<b>6.4.1.13</b>	11th floor	67.57	Sqm			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
6.4.1.14	12th floor	52.13	Sqm			
6.4.2	Providing waterproof plaster in W.C. and bath 20 mm thick for dado in cement mortar 1:3 with neat finishing, floating using waterproofing compound at the rate of 1 kg. per bag of cement of approved make and manufacturer and curing (and filling joints of Nahani trap and any outlet by properly) etc. complete.					
6.4.2.1	1st Basement floor	14.72	Sqm			
6.4.2.2	Ground floor	43.24	Sqm			
6.4.2.3	1st floor	130.76	Sqm			
6.4.2.4	2nd floor	130.76	Sqm			
6.4.2.5	3rd floor	140.70	Sqm			
6.4.2.6	4th floor	140.70	Sqm			
6.4.2.7	5th floor	101.57	Sqm			
6.4.2.8	6th floor	123.02	Sqm			
6.4.2.9	7th floor	123.02	Sqm			
6.4.2.10	8th floor	123.02	Sqm			
6.4.2.11	9th floor	146.74	Sqm			
6.4.2.12	10th floor	139.74	Sqm			
6.4.2.13	11th floor	139.74	Sqm			
6.4.2.14	12th floor	119.76	Sqm			
6.5	<b>Terrace /Refuge /Podium waterproofing</b>					
6.5.1	Providing cement based water proofing treatment to terraces (Indian water proofing or alike) with brick bats laid in required slope to drain the water for any span after cleaning the base surface. Applying a coat of cement slurry admixed with approved water proofing compound and laying the brick bats on bottom layer in C.M.1:5 admixed with approved water proofing compound filling up to half depth of brick bats, curing this layer for 3 days, applying cement slurry over this layer joints of brick bats with C.M.1:3 admixed with approved water proofing compound and finally top finishing with average 20 mm. thick layers of same mortar added with jute fiber at 1 Kg per bag including finishing the surface smooth with cement slurry admixed with approved water proofing compound. Marking finished surface with false squares of 300mm x 300 mm. making the junctions at the parapet rounded and tapered top for required height, with drip mould at the junction of plaster and parapet and curing and covering 10 years Guarantee against leak proofness on Court fee stamp paper of Rs. 500/- including ponding test etc. complete.	2849.1	Sqm			
6.5.2	Providing and laying jointless Polydee-LM, a highly flexible elastometric coating for RCC / cementitious surface for terrace waterproofing on B.B. Coba / R.C.C, after application of TP-42 Primer on perfectly clean surface (free from loose dust and foreign matter) application of 1st coat of Polydee-LM @ 700 gms/sqm and applying 2nd coat of Polydee-LM @ 700 gms/sqm	2849.1	Sqm			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	and finishing the same with sprinkling the AG-10 granules on the wet coating. (After finishing covering the treatment with 25mm cement plaster for protection with fibrillated 6mm Plyplast fibre @ 125 gms/sqm to be					
	paid in separate item.) covering 7 years guarantee on Court Fee Stamp Paper of Rs. 100/- etc. complete.					
<b>7.0</b>	<b>SH: 7 MISCELLANEOUS WORKS</b>					
<b>7.1</b>	<b>Plum Concrete</b>					
	<b>Plum Concrete :-</b> Providing & Laying M 15 grade Plum concrete in U.G tank as shown in the drawing (rubble volume up to 40%) as per specifications with aggregate stone in average size and shape with necessary compaction including curing & cleaning etc complete. Minimum cementitious content shall be as specified in IS code. (Notional Quantity)	12.006	Cum			
<b>7.2</b>	<b>Dowel Anchors :</b> Providing, installing, pulling, testing of Dowel Anchors of 3.15 mts length & capacity as specified, including drilling nominal 80mm dia hole and 32mm dia tor steel in pattern as shown in drawing, placed @ 1.50 m c/c. The scope includes mobilization & demobilization of necessary plant & equipment for drilling vertical hole into rock, providing reinforcement bar & grouting the holes etc complete. Grouting shall be done with cement water in 1:1 proportion along with non shrink compound.	1140	No.			
	The scope also includes conducting a pull out test on @ 10% of dowel anchor selected at random and shall satisfy the design load requirement.					
<b>8.0</b>	<b>SH: 8 TESTING OF MATERIALS</b>					
	Laboratory testing of various materials used during construction in District Vigilance & Quality Control Laboratory or as per approved Laboratory etc complete					
<b>8.1</b>	Concrete mix design (with all tests on basic material)	4	Test			
<b>8.2</b>	Compressive strength of C.C cube test (set of 3 cubes)	2376	Test			
<b>8.3</b>	Rubble Stone (Crushing Value/Compressive Strength, Water Absorption & Specific Gravity,)	1	Test			
	<b>CIVIL WORK</b>					
<b>1.0</b>	<b>BRICK WORK</b>					
1.1	Providing Autoclaved Aerated Concrete Block masonry of Ecolite or equivalent make conforming to IS:2185 (Part 3) - 1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in superstructure including striking joints, raking out joints and scaffolding etc. Complete. (The test shall be carried out conforming to IS:6441 (Part I) - 1972)					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	i) Basement floors	68	Cum			
	ii) Ground floor	113	Cum			
	iii) 1st floor	30	Cum			
	iv) 2nd floor	30	Cum			
	v) 3rd floor	38	Cum			
	vi) 4th floor	38	Cum			
	vii) 5th floor	50	Cum			
	viii) 6th floor	39	Cum			
	ix) 7th floor	39	Cum			
	x) 8th floor	39	Cum			
	xi) 9th floor	105	Cum			
	xii) 10th floor	39	Cum			
	xiii) 11th floor	39	Cum			
	xiv) 12th floor and above	80	Cum			
1.2	Providing Autoclaved Aerated Concrete Block masonry of Ecolite or equivalent make conforming to IS:2185 (Part 3) - 1984 in extra fine jointing mortar of fixoblock of UltraTech or equivalent in Half brick thick wall including striking joints, raking out joints and scaffolding etc. Complete. (The test shall be carried out conforming to IS:6441 (Part I) - 1972)					
	i) Basement floors	0	Sqm			
	ii) Ground floor	110	Sqm			
	iii) 1st floor	367	Sqm			
	iv) 2nd floor	367	Sqm			
	v) 3rd floor	242	Sqm			
	vi) 4th floor	242	Sqm			
	vii) 5th floor	218	Sqm			
	viii) 6th floor	518	Sqm			
	ix) 7th floor	518	Sqm			
	x) 8th floor	518	Sqm			
	xi) 9th floor	411	Sqm			
	xii) 10th floor	518	Sqm			
	xiii) 11th floor	518	Sqm			
	xiv) 12th floor and above	228	Sqm			
	<b>TOTAL OF MASONRY WORK</b>					
<b>2.</b>	<b>PLASTERING WORK</b>					
2.1	Providing and applying gypsum plaster ( with Gypsum material of Gypsum India / Mega Sign or equivalent make ) with finishing with gypsum material in 10 to 13 millimeter thickness to previously plastered surface / or on newly brick surface ( Excluding rough cast plaster ) in all position including preparing and Finishing the surface scaffolding etc.complete.					
	<b>a) Location : Internal walls</b>					
	i) Basement floors	0	Sqm			



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	ii) Ground floor	1,684	Sqm			
	iii) 1st floor	1,048	Sqm			
	iv) 2nd floor	1,048	Sqm			
	v) 3rd floor	1,450	Sqm			
	vi) 4th floor	1,450	Sqm			
	vii) 5th floor	1,402	Sqm			
	viii) 6th floor	1,450	Sqm			
	ix) 7th floor	1,450	Sqm			
	x) 8th floor	1,450	Sqm			
	xi) 9th floor	1,672	Sqm			
	xii) 10th floor	1,450	Sqm			
	xiii) 11th floor	1,450	Sqm			
	xiv) 12th floor and above	1,812	Sqm			
2.2	Providing internal cement plaster 12mm thick in single coat in cement mortar 1:5 without neeru finish to concrete or brick surfaces, in all positions including scaffolding and curing etc. complete.					
	i) Basement floors	4,573	Sqm			
	ii) Ground floor	0	Sqm			
	iii) 1st floor	0	Sqm			
	iv) 2nd floor	0	Sqm			
	v) 3rd floor	0	Sqm			
	vi) 4th floor	0	Sqm			
	vii) 5th floor	0	Sqm			
	viii) 6th floor	0	Sqm			
	ix) 7th floor	0	Sqm			
	x) 8th floor	0	Sqm			
	xi) 9th floor	0	Sqm			
	xii) 10th floor	0	Sqm			
	xiii) 11th floor	0	Sqm			
	xiv) 12th floor and above	0	Sqm			
	<b>a) Location : Internal ceilings</b>					
	i) Basement floors	0	Sqm			
	ii) Ground floor	0	Sqm			
	iii) 1st floor	0	Sqm			
	iv) 2nd floor	0	Sqm			
	v) 3rd floor	0	Sqm			
	vii) 5th floor	0	Sqm			
	viii) 6th floor	0	Sqm			
	ix) 7th floor	0	Sqm			
	x) 8th floor	0	Sqm			
	xi) 9th floor	0	Sqm			
	xii) 10th floor	0	Sqm			
	xiii) 11th floor	0	Sqm			
	xiv) 12th floor and above	0	Sqm			
2.3	Providing sand faced plaster externally in cement mortar using approved screened sand, in all positions including base coat of 15 mm thick in cement mortar 1:4 using waterproofing compound at 1 kg per cement bag					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	curing the same for not less than 2 days and keeping the surface of the base coat rough to receive the sand faced treatment 6 to 8 mm thick in cement mortar 1:4 finishing the surface by taking out grains and curing for fourteen days scaffolding etc.complete.					
	i) Basement floors	0	Sqm			
	ii) Ground floor	787	Sqm			
	iii) 1st floor	264	Sqm			
	iv) 2nd floor	264	Sqm			
	v) 3rd floor	210	Sqm			
	vi) 4th floor	210	Sqm			
	vii) 5th floor	197	Sqm			
	viii) 6th floor	199	Sqm			
	ix) 7th floor	199	Sqm			
	x) 8th floor	199	Sqm			
	xi) 9th floor	199	Sqm			
	xii) 10th floor	210	Sqm			
	xiii) 11th floor	210	Sqm			
	xiv) 12th floor and above	781	Sqm			
2.4	Providing and applying plaster with plaster of paris in 6mm thickness to previously plaster surface in all position including preparing the surface scaffolding etc. complete.					
	i) Basement floors	97.00	Sqm			
	ii) Ground floor	97.00	Sqm			
	iii) 1st floor	97.92	Sqm			
	iv) 2nd floor	98.84	Sqm			
	v) 3rd floor	99.76	Sqm			
	vi) 4th floor	100.68	Sqm			
	vii) 5th floor	101.60	Sqm			
	viii) 6th floor	102.52	Sqm			
	ix) 7th floor	102.98	Sqm			
	x) 8th floor	103.44	Sqm			
	xi) 9th floor	103.90	Sqm			
	xii) 10th floor	104.36	Sqm			
	xiii) 11th floor	104.82	Sqm			
	xiv) 12th floor and above	105.28	Sqm			
	<b>TOTAL OF PLASTER WORK</b>					
<b>3.</b>	<b>FACADE WORK</b>					
3.1	Providing and fixing aluminium grill of spray PVDF (Holly silver) of approved thickness including fixing in position aluminium frame section of approved size box, cutting to the required size with all wastage , labour, lead lift etc. complete.					
	Product Name : spray PVDF (Holly silver)	1613.00	Sqm			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Akzo Ref : ANE2149/17					
	Primer : SX5025I					
	System : 2 Coat					
	DFT : >35					
	Chemist : Ketan					
	Remark : LSR No. 1903					
	Customer : Real surface finish					
3.2	Providing and fixing mild steel grill work for windows, ventilators etc. 20 kg/sqm as per drawing including fixtures, necessary welding and painting with one coats of anticorrosive paint and two coats of oil painting complete.	179	Sqm			
3.3	Providing and fixing mild steel grill gate with angle iron frame 65mm x 65mm x 10mm with iron bars at 150mm C/C and diagonal flats as per the detailed drawing including hinges, pivot block locking arrangement, welding riveting and oil painting of three coats of approved shade Weight of gate 35 Kg/Smt.					
	i) Openable Gate Size : 1500mm x 1800mm	3	Sqm			
	ii) Sliding Gate Size : 4500mm x 1800mm	9	Sqm			
3.4	Designing, providing and fixing 30mm thick stone (Basic rate : 300/ Sqft) Granite cladding as shown in the drawing etc., work shall include site measurements, coordination of pattern if any, preparing with required grooves, drilling for anchors, finishing surfaces, applying sealer coat etc. as detailed in drawing / specification / instruction / approved shop drawing for fixing / anchoring with concrete /masonry. Fitting and fixtures used shall be stainless steel (SS 316) material. Material supporting arrangements shown in the drawing is indicative and contractor shall make their own shop drawings and suggest method of fixing with type of anchors they propose to use for concrete/ masonry sections where they are to be fixed. Also including required grouting / sealing compounds for joints / junctions. Work shall include double legged independent scaffolding for entire height etc. all complete to approval of PM.	3,129	Sqm			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
3.5	Designing, providing, fabricating and installing Structural glazing system (inclusive of vision and spandrel panels) with back structure framing arrangement, as per approved design (based on concept architectural elevation drawings), Aluminium members like mullions, etc. to be 60 micron PEF grade powder coating (Jotun / Akzonobel or equivalent) in approved shade, including required stainless steel fitting and fixtures, required hot dip galvanised / non ferrous metal anchor fasteners, jointing and sealing with approved compatible silicon sealant (Dow Corning or					
	equivalent approved), required fire stop, sheaves, smoke seal. Work to include preparing and finishing junctions with concrete, masonry,					
	aluminium including use of flashing if any as approved by the PM etc. all complete.					
	Further include, required designing as per IS 875-2000 loading, preparation of shop drawings and getting approval from the Structural Consultants for designing and architectural & installation from Architect, taking actual site measurements and modifying and coordinating with site and fabrication yard; giving waterproofing test etc. all confirming to international standards and to the entire satisfaction of the PM. Further the system installed and tested shall be guaranteed for 10 years in approved proforma on stamp paper of appropriate value.					
	Glass pane sizes to be as per Architectural Drawings.					
	With Unitised Glazing system with horizontal and vertical aluminium capping					
	Fixed vision panels of DGU with 6mm thick approved Heat strengthen clear glass + 12mm thick air gap + 6mm thick approved Heat strengthen clear glass (Glass of Saint Gobain or equivalent) as selected by Architect.	2,064	Sqm			
3.6	Providing, fixing, fabricating railing @ 900mm high above finish floor level, in profile made out of 50mm dia Stainless steel (grade 316) uprights (end and intermediate) at about 950mm c/c and @ 50mm dia SS pipe matt finish as	152	Rmt			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	hand rail including 10mm thick clear toughened glass for railing, SS. rosette cover fixed with SS pins, dowels, clamps, rubber, screws, gaskets etc. including required jointing and sealing with approved quality silicon sealant etc. all complete as per detail drawing, specification to entire satisfaction of PM. Work includes preparing shop drawings to scale with joinery and fixing details and further includes providing samples and preparing full scale mockup samples for approval.					
3.7	Designing, providing, fabricating and fixing in position <b>Glass canopy</b> with 13.52mm thick laminated glass (6mm thick inner clear toughened glass + 1.52mm thick PVB of approved colour and make + 6mm thick outer clear toughened glass of Saint Gobain or					
	equivalent approved, supported on MS structural steel framing (as per design of Structural Consultant and paid separately), as detailed in structural and architectural concept drawings and approved in shop drawing; including required fixtures and fittings of stainless steel (SS 304), anchor fasteners / hooks, required flashings / trims, jointing and sealing with approved silicon sealant, and finishing junctions with steel, concrete, stone, timber, aluminium, glass, etc. all complete. to the entire satisfaction of PM. Further include required preparation of shop drawings and getting approval from the Architect and structural consultants, providing samples, mockups, taking actual site measurements and modifying and coordinating with site and fabrication yard, all conforming to international standards etc. complete to the approval of PM.					
3.8	Providing and fixing 300mm high x 6mm thick SS (314) strips. SS strips to be inserted properly in the surface behind and to be in brush finish as per detail drawing. Surface to be flushed with adjoining surface.	3,413	Rmt			
	<b>TOTAL OF FACADE WORK</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
<b>4.0</b>	<b>FLOORING WORK</b>					
	Providing and laying in situ cement concrete M30 with tremix treatment for 200 mm thickness for flooring with groove cutting of 4mm wide and 20mm deep with necessary refilling with bitumen etc. complete.					
	i) Basement floors	4,978	Sqm			
	<b>TOTAL OF FLOORING WORK</b>					
<b>5.0</b>	<b>TESTING WORK</b>					
5.1	Item No. 1 : To carry out water absorption, compressive strength, Efflorescence (set of 5 Bricks) on in approved laboratory and submitting test results	5	Nos.			
5.2	Item No. 2 : To carry out Density test (set of 3 blocks), compressive strength (set of 8 blocks), water absorption test (set of 3 blocks) on concrete blocks in approved laboratory and submitting test results	5	Nos.			
5.3	Item No. 2 : To carry out Core cutting in concrete pavement.	3	Nos.			
	<b>TOTAL OF TESTING WORK</b>					
	<b>TOTAL OF CIVIL WORK</b>					
<b>6.0</b>	<b>ELECTRICAL WORK</b>					
<b>1.0</b>	<b>MV SWITCHGEAR</b>					
<b>1.1</b>	<b>Panel</b>					
	Supply, installation, testing and commissioning of cubicle type panels as specified and shown on drawing.					
	<b>Note:</b>					
	i) Main Aluminium busbars with bar type feeder connections & all internal wiring and connections.					
	ii) Earthing all components, frame etc. to a common internal earth bar.					
	iii) Painting all sheet metal works.					
	iv) All accessories & supporting structure.					
	v) Brass glands and crimping lugs for sending and receiving ends.					
	vi) All ammeters with C.T's and voltmeter and energy meters with necessary fuses.					
	vii) All Load Managers to have parameters like KW, KVA, A, V, PF, KVAR, Active & Reactive component of power, RS 485 port to have BMS compatibility as required & desired to complete the					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	system.					
	vii) Panel components as specified.					
	viii) MS base frame.					
	ix) All switch gear to have short circuit levels as specified.					
<b>a</b>	<b>Main Distribution Panel + APFCR Panel</b>					
		<b>1</b>	Nos.			
<b>b</b>	<b>Fire Fighting Panel</b>					
		<b>1</b>	Nos.			
<b>c</b>	<b>Basement Ventilation Panel</b>					
		<b>1</b>	Nos.			
<b>1.2</b>	<b>DB ( Distribution Boards)</b>					
	<i>General Specifications</i>					
	Supply, installation, testing & commissioning of 500V Distribution Boards as specified & shown on drawing with necessary blankplates(if require), interconnection and accessories					
	<b>Note:</b>					
	i) Copper busbars together with tapped neutral bar for individual phases.					
	ii) Copper earth strip with tapping for EEC					
	iii) Busbar mounting mcb's individually lockable in off position.					
	iv) Interconnections and earthing.					
	v) Sheet steel enclosure suitable for recessed or surface mounting with hinged lockable doors interlocked with the incomer switch.					
	vi) Phase to phase barriers in case of 3Ph boards.					
	vii) Necessary support frame & painting, labelling, phase indicating lamps with fuses etc. complete.					
	viii) DOUBLE DOOR					
	ix) Preferably standard DB's of specified makes as per list of materials shall be used					
	<i>CSR Base Specifications</i>					
<b>a</b>	ETPN DB - (12 WAY)	<b>2</b>	Nos.			
	Supplying & erecting triple pole and neutral distribution board (TPNDB) with door surface/ flush mounted SPMCB of 12 ways/phase (36 Poles) on iron/ G.I. frame/wooden board. (Horizontal Busbar type)					
	as per specification no. SW-SWR/MCBDB					
	IP Protection: <del>IP-20</del> / IP 43 / <del>IP-54</del>					
	<u>Incommer:</u>					
<b>b</b>	upplying, erecting & marking TPMCB 6 A to 32A in provided distribution board as per	<b>7</b>	Nos.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	specification No. SW-SWR/MCB					
<b>c</b>	Providing, erecting & commissioning RCCB	<b>22</b>	Nos.			
	only of electro magnetic type with 30/100/300					
	mA sensitivity and having capacity of 16/25A.					
	2 pole complete as per specification No. SWRCCB/RCCB					
	<u>Outgoing:</u>					
<b>d</b>	Supplying, erecting & marking SPMCB 6A to	<b>163</b>	Nos.			
	32A, C-series (for motor/power) in provided					
	distribution board as per specification No. SWSWR/MCB					
<b>e</b>	ETPN DB - (8 WAY)	<b>5</b>	Nos.			
	Supplying & erecting triple pole and neutral					
	distribution board (TPNDB) with door surface/ flush mounted SPMCB of 24 ways, on					
	iron/ G.I. frame/wooden board.(Horizontal type)					
	as per specification No. SW-SWR/MCBDB					
	IP Protection: <del>IP-20</del> / IP 43 / <del>IP-54</del>					
<b>f</b>	VTPN DB - (8 WAY)	<b>2</b>	Nos.			
	Supplying & erecting triple pole and neutral					
	distribution board (TPNDB) with door surface/					
	flush mounted suitable for 3 Pole MCCB as					
	Incommer & outgoing SP MCB (24 Poles) or					
	TP MCB of 8 ways (24 Poles) , on iron/ G.I.					
	frame. (Vertical Busbar type) as per specification No. SW-SWR/MCBDB1					
	IP Protection: <del>IP-20</del> / IP 43 / <del>IP-54</del>					
	<u>Incommer:</u>					
<b>g</b>	Supplying, erecting & marking TPMCB 40A to	<b>2</b>	Nos.			
	63A in provided distribution board as per specification No. SW-SWR/MCB					
	<u>Outgoing:</u>					
	<b>TOTAL OF MV SWITCHGEAR / POWER PANEL / DB</b>					
<b>2.0</b>	<b>LT CABLING</b>					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
<b>2.1</b>	<b>LT Cable (Power Cabling)</b>					
	<u>General Specifications</u>					
	Supply and laying of 1.1kV Voltage grade, aluminium / copper conductor, XLPE insulated, steel armoured, power / control cables. The cables shall be laid in tray / hume pipe / in ready made trenches, with nylon cable ties / MS Clamps @ 600mm interval etc., as required.					
	<u>CSR Base Specifications</u>					
<b>2.1.1</b>	<b>7.2 LT Cables (Copper) (CB-LT/CU)</b>					
<b>a</b>	Supplying, erecting & terminating PVC armoured cable 3 core 2.5 sq mm copper conductor continuous 5.48 sq mm (12 SWG)	<b>200</b>	Mtrs.			
	G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/CU					
<b>b</b>	Supplying, erecting & terminating PVC armoured cable 3 core 4 sq mm copper conductor continuous 5.48 sq mm (12 SWG)	<b>150</b>	Mtrs.			
	G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/CU					
<b>c</b>	Supplying, erecting & terminating PVC armoured cable 3 core 6 sq mm copper conductor continuous 5.48 sq mm (12 SWG)	<b>175</b>	Mtrs.			
	G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/CU					
<b>c</b>	Supplying, erecting & terminating PVC armoured cable 3 core 10 sq mm copper conductor continuous 5.48 sq mm (12 SWG)	<b>200</b>	Mtrs.			
	G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/CU					
<b>e</b>	Supplying, erecting & terminating PVC armoured cable 4 core 4 sq mm copper conductor continuous 5.48 sq mm (12 SWG)	<b>500</b>	Mtrs.			
	G.I. earth wire complete erected with					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	glands & lugs, on wall/ trusses/pole or laid in provided					
	trench/ pipe as per specification no. CB-LT/CU					
<b>f</b>	Supplying, erecting & terminating PVC armoured cable 4 core 6 sq mm copperconductor continuous 5.48 sq mm (12 SWG)	<b>175</b>	Mtrs.			
	G.I. earth wire complete erected with glands &lugs, on wall/ trusses/pole or laid in provided					
	trench/ pipe as per specification no. CB-LT/CU					
<b>g</b>	Supplying, erecting & terminating PVC armoured cable 4 core 10 sq mm copper conductor continuous 5.48 sq mm (12 SWG)	<b>1850</b>	Mtrs.			
	G.I. earth wire complete erected with glands &					
	lugs, on wall/ trusses/pole or laid in provided					
	trench/ pipe as per specification no. CB-LT/CU					
<b>h</b>	Supplying, erecting & terminating PVC armoured cable 4 core 16 sq mm copper conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with	<b>300</b>	Mtrs.			
	glands & lugs, on wall/ trusses/pole or laid in					
	provided trench/ pipe as per specification no.					
	CB-LT/CU					
<b>i</b>	Supplying, erecting & terminating PVC armoured cable 4 core 25 sq mm copper conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with	<b>100</b>	Mtrs.			
	glands & lugs, on wall/ trusses/pole or laid in					
	provided trench/ pipe as per specification no.					
	CB-LT/CU					
<b>j</b>	Supplying, erecting & terminating PVC armoured cable 4 core 35 sq mm copper conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with	<b>90</b>	Mtrs.			
	glands & lugs, on wall/ trusses/pole or laid in					
	provided trench/ pipe as per specification no.					
	CB-LT/CU					
<b>k</b>	Supplying, erecting & terminating PVC	<b>80</b>	Mtrs.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	armoured cable 4 core 50 sq mm copper conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no.					
<b>2.1.2</b>						
<b>a</b>	<b>7.1 LT Cables (Aluminum) (CB-LT/AL)</b>					
<b>b</b>	Supplying, erecting & terminating PVC armoured cable 3 core 4 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no.	<b>300</b>	Mtrs.			
	CB-LT/AL					
<b>c</b>	Supplying, erecting & terminating PVC armoured cable 3 core 6 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no.	<b>130</b>	Mtrs.			
	CB-LT/AL					
<b>c</b>	Supplying, erecting & terminating PVC armoured cable 3 core 10 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no.	<b>125</b>	Mtrs.			
	CB-LT/AL					
<b>e</b>	Supplying, erecting & terminating PVC armoured cable 4 core 4 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification	<b>300</b>	Mtrs.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	no.					
	CB-LT/AL					
<b>f</b>	Supplying, erecting & terminating PVC armoured cable 4 core 6 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no.	<b>125</b>	Mtrs.			
	CB-LT/AL					
<b>g</b>	Supplying, erecting & terminating PVC armoured cable 4 core 10 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no.	<b>200</b>	Mtrs.			
	CB-LT/AL					
<b>h</b>	Supplying, erecting & terminating PVC armoured cable 4 core 16 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no.	<b>250</b>	Mtrs.			
	CB-LT/AL					
<b>i</b>	Supplying, erecting & terminating PVC armoured cable 3½ core 25 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no.	<b>90</b>	Mtrs.			
	CB-LT/AL					
<b>j</b>	Supplying, erecting & terminating PVC armoured cable 3½ core 35 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected	<b>80</b>	Mtrs.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	with glands & lugs, on wall/ trusses/pole or laid					
	in provided trench/ pipe as per specification no.					
	CB-LT/AL					
<b>k</b>	Supplying, erecting & terminating PVC armoured cable 3½ core 50 sq mm	<b>75</b>	Mtrs.			
	aluminium conductor with continuous 5.48 sq					
	mm (12 SWG) G.I. earth wire complete erected					
	with glands & lugs, on wall/ trusses/pole or laid					
	in provided trench/ pipe as per specification no.					
	CB-LT/AL					
<b>l</b>	Supplying, erecting & terminating PVC armoured cable 3½ core 70 sq mm	<b>85</b>	Mtrs.			
	aluminium conductor with continuous 8.35 sq					
	mm (10 SWG) G.I. earth wire complete erected					
	with glands & lugs, on wall/ trusses/pole or laid					
	in provided trench/ pipe as per specification no.					
	CB-LT/AL					
<b>m</b>	Supplying, erecting & terminating PVC armoured cable 3½ core 95 sq mm	<b>90</b>	Mtrs.			
	aluminium conductor with continuous 8.35 sq					
	mm (10 SWG) G.I. earth wire complete erected					
	with glands & lugs, on wall/ trusses/pole or laid					
	in provided trench/ pipe as per specification no.					
	CB-LT/AL					
<b>n</b>	Supplying, erecting & terminating PVC armoured cable 3½ core 120 sq mm	<b>90</b>	Mtrs.			
	aluminium conductor with continuous 12.97					
	sq mm (8 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole					
	or laid in provided trench/ pipe as per specification no. CB-LT/AL					
<b>o</b>	Supplying, erecting & terminating PVC armoured cable 3½ core 150 sq mm	<b>110</b>	Mtrs.			
	aluminium conductor with continuous 12.97 sq					
	mm (8 SWG) G.I. earth wire complete erected					
	with glands & lugs, on wall/ trusses/pole or laid					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	in provided trench/ pipe as per specification no.					
	CB-LT/AL					
<b>p</b>	Supplying, erecting & terminating PVC armoured cable 1100 V. 3½ core 185 sq mm	<b>100</b>	Mtrs.			
	aluminium conductor with continuous 12.97					
	sq mm (8 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole					
	or laid in provided trench/ pipe as per specification no. CB-LT/AL					
<b>q</b>	Supplying, erecting & terminating PVC armoured cable 3½core 240 sq mm	<b>100</b>	Mtrs.			
	aluminium conductor with continuous 12.97 sq					
	mm (8 SWG) G.I. earth wire complete erected					
	with glands & lugs, on wall/ trusses/pole or laid					
	in provided trench/ pipe as per specification no.					
	CB-LT/AL					
<b>r</b>	Supplying, erecting & terminating PVC armoured cable 3½ core 300 sq mm	<b>400</b>	Mtrs.			
	aluminium conductor with continuous 12.97					
	sq mm (8 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole					
	or laid in provided trench/ pipe as per specification no. CB-LT/AL					
<b>2.3</b>	<b>Electrical Work From Meter Room to Office</b>					
<b>2.3.1</b>	<b>Electrical Meter</b>					
	Supply & installations of Meter					
	<b>(Not in Electrical Contractor Scope)</b>					
<b>2.3.2</b>	<b>Breakers / Isolators after Meter</b>					
	<b>General Specifications</b>					
	Supply, installation, testing & commissioning of MCB's / Isolators in Metal boards in IP42 enclosure, as follows:					
	3 Phase					
	<b>CSR Base Specifications</b>					
<b>a</b>	Supplying, erecting & marking TPMCB 40A to	<b>55</b>	Nos			
	63A in provided distribution board as per specification No. SW-SWR/MCB					
<b>b</b>	Providing & erecting 3 Pole MCCB of	<b>4</b>	Nos			
	200A,415V capacity with S.C. rating 25 kA					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	(Ics=100% of Icu) thermal and magnetic setting					
	with provided leads on iron /G.I. frame as per					
	specification no. SW-SWR/MCCB					
	<b>ISOLATOR</b>					
	3 Phase					
<b>a</b>	63A, TPN ISOLATOR	<b>55</b>	Nos			
<b>b</b>	160A, TPN ISOLATOR	<b>4</b>	Nos			
	<b>TOTAL OF CABLING</b>					
<b>3.0</b>	<b>CABLE TRAY / CONDUITS / HUME PIPE</b>					
<b>3.1</b>	<b>Cable Trays</b>					
	Supply & installations of Pre Galvanised 60 microns, readymade Mild Steel cable trays made of 2.0mm thk, <b>Perforated</b> type 60mm height, complete with couplers, bends etc.The Cable tray shall be fixed to the Floor with GI C-Clamps of 50mm x 5mm thk, on which the Cable tray shall be fixed. The clamps shall be fixed to floor with 6mm anchore Bolts . The rate to include all materials & labour. (In Server Room / Hub Room)					
<b>a</b>	450mm wide	<b>50</b>	Mtrs.			
<b>b</b>	300mm wide	<b>100</b>	Mtrs.			
<b>c</b>	150mm wide	<b>60</b>	Mtrs.			
<b>3.2</b>	<b>Conduits</b>					
	Supply and laying Raceways/Conduits in the trenches or through partitions with all accessories, bends, pull wire separately. The metal conduits / Raceways shall be earth. The rate include all accessories but excluding the floor mounted junction boxes which shall be paid. the rate shall include bends, couplers etc.					
	<b>FRLS PVC Conduits</b>					
	<b>HMS</b>					
<b>a</b>	32mm HMS FRLS PVC Conduit	<b>60</b>	Mtrs.			
<b>b</b>	25mm HMS FRLS PVC Conduit	<b>80</b>	Mtrs.			
<b>c</b>	20mm HMS FRLS PVC Conduit	<b>100</b>	Mtrs.			
	<b>MMS</b>					
<b>a</b>	32mm HMS FRLS PVC Conduit	<b>60</b>	Mtrs.			
<b>b</b>	25mm HMS FRLS PVC Conduit	<b>80</b>	Mtrs.			
<b>c</b>	20mm HMS FRLS PVC Conduit	<b>100</b>	Mtrs.			
	<b>GI Conduits</b>					
<b>a</b>	32mm GI Conduits	<b>50</b>	Mtrs.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
<b>b</b>	25mm GI Conduits	<b>60</b>	Mtrs.			
<b>3.3</b>	<b>Pipe</b>					
	Supply, laying of Pipe complete with excavation, laying of pipes, proper jointing, back filling with soft soil, installing cable markers, etc					
	<b>RCC Hume Pipe</b>					
<b>a</b>	200mm dia	<b>20</b>	Mtrs.			
<b>b</b>	250mm dia	<b>10</b>	Mtrs.			
<b>c</b>	300mm dia	<b>30</b>	Mtrs.			
	<b>HDPE Pipe</b>					
<b>a</b>	150mm dia	<b>30</b>	Mtrs.			
<b>b</b>	200mm dia	<b>40</b>	Mtrs.			
<b>3.4</b>	<b>IC chamber</b>					
	Providing, constructing, testing and commissioning of 230 mm thick BB masonry rectangular inspection chamber of internal dimension as specified below, 150 mm thick bedding in CC 1:2:4 inside and outside plaster in cm 1:3, C. I. rungs weighing 5.2 kg each, C. I heavy duty frame and cover to sustain a load of 45 tons of size as required, including necessary centering and shuttering, reinforcement, excavation in all kind of soil, dewatering, refilling, watering, ramming and removing the surplus excavated earth, making good the same complete as required. (Contractor shall submit the structural design and drawings for the approval of Project Manager prior to execution).					
<b>a</b>	Inspection chamber of internal size 0.9 mtr x 0.9 mtr x Depth(as required on site)	<b>2</b>	Nos.			
<b>b</b>	Inspection chamber of internal size 0.6 mtr x 0.6 mtr x Depth(as required on site)	<b>2</b>	Nos.			
<b>c</b>	Inspection chamber of internal size 0.45 mtr x 0.45 mtr x Depth(as required on site)	<b>2</b>	Nos.			
<b>d</b>	Inspection chamber of internal size 0.3 mtr x 0.3mtr x Depth(as required on site)	<b>2</b>	Nos.			
<b>3.5</b>	<b>Trench</b>					
	Constructing 750mm wide & 600mm height trench in 230 thick brick masonry in 1:5 cement mortar complete with: 150 thick foundation with 1:4:8 cement concrete with bottom cement concrete with bottom channel.20mm plaster inside and outside	<b>15</b>	Mtrs.			



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	with 1:3 cement mortar. Running grating of 40 x 5 flat 25mm cc welded vertically in a 40 x 40 x 5 around frame, 50 x 50 x 6 angle runners on either side embedded in masonry with holdfasts. generally meeting the intents of the specifications and drgs. RCC covers of Suitable size to be provided on top in series for maintenance purpose					
	<b>TOTAL OF CABLE TRAY / CONDUITS / HUME PIPE</b>					
<b>4.0</b>	<b>POINT WIRING</b>					
	<b>Notes :</b>					
	<b>1) Rates for point wiring shall include</b>					
	A) Supply & installation of conduits, wires, junction boxes & accessories.	-				
	B) Supply & installation of Switches & sockets .	-				
	C) Rate shall include cost of GI switch Box, Modular Front Plate, Modular Switches, ceiling rose & holder, connectors etc.	-				
	D) The rate shall include cost of 10mm MS hook mounted in ceiling slab. Rate to include cost of dimmer & switch for Chandelier point and Ceiling Fan point					
	E) Circuit wiring from MCB DBs to the first switch boards OR looping to other switch boxes shall be included as part of primary, points for the `Rate'.	-				
	<b>2) Rates for point wiring shall not included</b>	-				
	A) Payments for light fixtures will be made separately as per the items given in 'Light Fixtures & Accessories'.	-				
	<b>Cost of MCB for DB not to be included.</b>					
	<b>3) General note:</b>					
	A) Unless otherwise specified, all wires in point wiring shall be 2.5 Sq. mm Stranded copper conductor 1.1 KV grade, I.S.I. marked (P+N+E), Fire Retardant Low Smoke (FRLs) insulated.	-				
	B)The Contractor can take more than one circuit in the same conduit provided they are of the same phase.	-				
	C) The size of conduit shall be decided according to the number of wires in it as per ISI & as specified. (Conduits size not less than 20 mm dia)	-				
	D) Wires shall be colour coded (Red, Yellow and Blue for Phases, Black for	-				

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Neutral & Green for earth).					
	The point wiring shall be terminated in a terminal block inside the junction box.	-				
	E) Looping of wires shall be in fittings and switch boxes only	-				
	F) External lighting shall be done with armoured cables.	-				
	G) Location of switches/sockets/ DBs shown on the drawings shall be confirmed with the Architect/ Consultant/ Project Manager before installation.	-				
	H) Type & location of light fixtures shown in the drawings are tentative and subject to revision as per the recommendation of Architect/ Consultant.	-				
	I) The quantities of point wiring will be revised as actual installed on account of such revisions in the layouts.	-				
		-				
		-				
<b>4.1</b>	<b><u>FOR COMMON AREA</u></b>	-	-			
<b>a</b>	<b>Light Point Wiring</b>					
	<i>General Specifications</i>					
	<b>Light Point Wiring with Switch Operated</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size (Run): 3 Run of 1.5 sqmm					
	Type: Flexible wire					
	Material of conductor: Copper					
	With insulated: PVC /FR /FRLS/ HFFR /HR /HRFR					
	Voltage Grade: 1100 volts					
	<b>Conduit:</b>					
	Size: 20 mm / 25 mm Dia.					
	Mechanical Strength: (LMS ) for Brack Wall, (MMS) for RCC Wall, (HMS) for RCC Slab					
	Material: PVC /FRLS PVC /GI (For Open)					
	Colors :Grey & Black					
	with all accessories (as per IS 9537 part 3)					
	<i>CSR Based Specifications</i>					
<b>b</b>	Point wiring for light/fan/bell concealed type					
	in min 20 mm PVC conduit with 1.5 sq.mm.					
	(2+1E) FR grade copper wires, moduler type					
	switch, earthing and required accessories as per					
	specification No: WG-PW/CW					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
c	1-Way Primary Light Point controlled by 6A 1-way Switch	190	Nos			
d	1-Way Secondary Light Point controlled without Switch	30	Nos			
e	2-Way Primary Light Point controlled by 2 Nos. x 2-way Switches	5	Nos			
f	2-Way Secondary Light Point controlled without Switch	10	Nos			
<b>4.2</b>	<b>Light Point Wiring with MCB Operated (For Car Park, Basement Lighting and Staircase Lighting.)</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size (Run): 3 Run of 1.5 sqmm					
	Type: Flexible wire					
	Material of conductor: Copper					
	With insulated: PVC / FR / FRLS/ HFFR / HR / HRFR					
	Voltage Grade: 1100 volts					
	<b>Conduit:</b>					
	Size: 20 mm / 25 mm Dia.					
	Mechanical Strength: (LMS ) for Brack Wall, (MMS) for RCC Wall, (HMS) for RCC Slab					
	Material: PVC/FRLS PVC/GI (For Open)					
	Colors : Grey & Black					
	with all accessories (as per IS 9537 part 3)					
	<b>Note:</b>					
	<b>MCB Control</b>					
	<b>Cost of MCB/Isolator not to be included.</b>					
a	Primary Light Point controlled by MCB	250	Nos			
b	Secondary Light Point. i.e. looped from the above Primary Point.	1100	Nos			
<b>4.4</b>	<b>Power Point</b>					
<b>a</b>	<b>Power Point (6A Switch+Socket)</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size (Run): 3 Run of 1.5 sqmm					
	Type: Flexible wire					
	Material of conductor: Copper					
	With insulated: PVC / FR / FRLS/ HFFR / HR / HRFR					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Voltage Grade: 1100 volts					
	<b>Conduit:</b>					
	Size: 20 mm / 25 mm Dia.					
	Mechanical Strength: (LMS ) for Brack Wall, (MMS) for RCC Wall, (HMS) for RCC Slab					
	Material: <del>PVC / FRLS PVC / GI (For Open)</del>					
	Colors : <del>Grey &amp; Black</del>					
	with all accessories (as per IS 9537 part 3)					
	<b>Switch+Socket:</b>					
	Switch- 6 Amp.					
	Socket - 6 Amp. 2/3 pin					
	Switch+socket flush mounted in 1.6 mm thick GI box	50	Nos			
b	<b>Power Point (6 / 16 A Switch+ 16 Socket )</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size (Run): 3 Run of <b>2.5 sqmm</b>					
	Type: Flexible wire					
	Material of conductor: Copper					
	With insulated: <del>PVC / FR / FRLS/ HFFR / HR / HRFR</del>					
	Voltage Grade: 1100 volts					
	<b>Conduit:</b>					
	Size: 20 mm / 25 mm Dia.					
	Mechanical Strength: (LMS ) for Brack Wall, (MMS) for RCC Wall, (HMS) for RCC Slab					
	Material: <del>PVC / FRLS PVC / GI (For Open)</del>					
	Colors : <del>Grey &amp; Black</del>					
	with all accessories (as per IS 9537 part 3)					
	<b>Switch+Socket:</b>					
	Switch- 16 Amp.					
	Socket - 6 / 16 Amp. 3 pin					
	Switch+socket flush mounted in 1.6 mm thick GI box	30	Nos			
c	<b>Exhaust Fan</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size (Run): 3 Run of <b>2.5 sqmm</b>					
	Type: Flexible wire					
	Material of conductor: Copper					
	With insulated: <del>PVC / FR / FRLS/ HFFR / HR / HRFR</del>					
	Voltage Grade: 1100 volts					
	<b>Conduit:</b>					
	Size: 25 mm Dia.					
	Mechanical Strength: (LMS ) for Brack					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Wall, (MMS) for RCC Wall, (HMS) for RCC Slab					
	Material: <del>PVC</del> / FRLS PVC					
	Colors : <del>Grey &amp; Black</del>					
	with all accessories (as per IS 9537 part 3)					
	<b>Switch+Socket:</b>					
	Switch- 6 Amp.					
	Socket - 6 Amp. 2/3 pin					
	Switch+socket flush mounted in 1.6 mm thick GI box	20	Nos			
<b>d</b>	<b>AC Point (For VRV / VRF IDU)</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size (Run): 3 Run of <b>2.5 sqmm</b>					
	Type: Flexible wire					
	Material of conductor: Copper					
	With insulated: <del>PVC / FR / FRLS/ HFFR / HR / HRFR</del>					
	Voltage Grade: 1100 volts					
	<b>Conduit:</b>					
	Size: 25 mm Dia.					
	Mechanical Strength: (LMS ) for Brack Wall, (MMS) for RCC Wall, (HMS) for RCC Slab					
	Material: <del>PVC</del> / FRLS PVC					
	Colors : <del>Grey &amp; Black</del>					
	with all accessories (as per IS 9537 part 3)					
	<b>Switch+socket:</b>					
	Switch- 6 Amp.					
	Socket - 6 / 16 Amp. 3 pin					
	Switch+socket surface mounted in 1.6 mm thick GI box					
e	Primary Point (MCB to 1st. AC)	8	Nos			
	<b>SUB-TOTAL OF POINT WIRING ( FOR COMMON AREA)</b>					
<b>4.5</b>	<b><u>FOR OUT DOOR LIGHT POINT</u></b>					
a	<b>Point Wiring for Landscape Lighting</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size: <b>3 Core 2.5 sq. mm</b>					
	Type: Armoured cable.					
	Material of conductor: Copper					
	With insulated: XLPE <del>PVC / FR / FRLS/ HFFR / HR / HRFR</del>					
	Colors : <del>Grey &amp; Black</del>					
	Voltage Grade: 1100 volts					
	<b>Conduit:</b>					
	NA					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>Note:</b>					
	<b>MCB Control</b>					
	Including the outlet points with connector, Junction boxes & sockets.					
	<b>Cost of MCB/Isolator not to be included.</b>					
b	Primary Landscape Light Point	10	Nos			
c	Secondary Landscape Light Point	30	Nos			
d	<b>Point Wiring for Facade Lighting</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size: <b>3 Core 2.5 sq. mm</b>					
	Type: Armoured cable.					
	Material of conductor: Copper					
	With insulated: XLPE PVC / FR / FRLS/ HFFR / HR / HRFR					
	Colors :Grey & Black					
	Voltage Grade: 1100 volts					
	<b>Conduit:</b>					
	NA					
	<b>Note:</b>					
	<b>MCB Control</b>					
	Including the outlet points with connector, Junction boxes & sockets.					
	<b>Cost of MCB/Isolator not to be included.</b>					
e	Primary Facade Light Point	10	Nos			
f	Secondary Facade Light Point	30	Nos			
	<b>SUB-TOTAL OF POINT WIRING ( FOR OUT DOOR LIGHT POINT)</b>					
	-	-	-			
<b>4.5</b>	<b><u>LIGHT FITTINGS</u></b>					
-	Supplying & erecting ready to use Retrofit T8	-	-			
-	LED 18 / 20 tube light with polycarbonate body, heat sink, integrated HF electronic driver	-	-			
-	complete & compatible to T8 / T12 LED luminaire with lamp.	800	Nos			
-	Supplying and erecting bulkhead fitting suitable for upto LED upto 12W fixed on wall.	-	-			
-	As per specification no.FG-IDF/BHF	100	Nos			
-	Supplying and erecting 2 x 36 / 40W FTL corrosion proof Capsule type in non	-	-			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
-	corrosive polycarbonate housing and prismatic polycarbonate cover with individual high power		-			
-	electronic ballast saving Power factor >0.9 and working voltage range of 170 - 270V ACIP 65		-			
-	protection suitable for cold storage areas to be fixed in false ceiling or at ceiling or on wall		-			
-	complete.	50	Nos			
-	Supplying and erecting LED square / circular 16 to 20W downlighter having pressure diecast aluminium housing, opal translucent cover, mounting arrangement with board for surface type or spring loaded mounting clips for flush type complete.	200	Nos			
-	Supplying and erecting square shaped CRCA /die-cast aluminium powder coated housing LED Panel light (slim edge-lit) 600X600mm suitable for 36 W-40W with provision for plane front frame with translucent cover fixed to the housing complete.	200	Nos			
-	Supplying and erecting LED flexible strip light 5m length upto 25W conforming IP 65 of any colour with driver complete.	100	Nos			
-	Supplying LED concealed type foot / step light with aluminium body for indoor application suitable for upto 5 W LED including driver and erecting by making necessary arrangement/recess in wall to make it flush with surface	50	Nos			
-	Supplying and erecting gate/garden light					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
-	fitting with 200mm dia.glass bowl suitable for upto					
-	12W LED Lamp on provided pipe as perspecification No. FG-ODF/GLT	50	Nos			
-	Supplying & erecting integral post top lantern fixtures (light house type) suitable upto LED					
-	18 W Lamp consisting of combination of spunaluminium canopy & clear acrylic top cover, cast aluminium polecap on provided pole/					
-	bracket as per specification no. FG-ODF/PTL (NEW)	100	Nos			
-	Supplying and erecting LED street light fitting suitable for 60W lamp, including lamp, with PF > 0.95 class IP 65 and above					
-	Housing of pressure die cast alluminium alloy and heat sink extruded alluminium complete as per specification No FG-ODF/FLS-2.	30	Nos			
-	Supplying and erecting regular/ standard model Ceiling fan of 1200mm. sweep complete erected in position as per specification no. FG	50	Nos			
-	Supplying and erecting fresh air cum Exhaust fan of light duty 250 V A.C. 50 cycles 300mm.					
-	1400 RPM rust proof body & blades, wiremesh, duly erected in an approved manner and marking					
-	Sr. No. Anddate of erection.	20	Nos			
-	<b>SUB-TOTAL OF POINT WIRING ( FOR OUT DOOR LIGHT POINT)</b>					
-	<b>TOTAL OF POINT WIRING</b>					
<b>5.0</b>	<b>LIFT ELECTRICAL WORK</b>					
<b>5.1</b>	<b>Inside the Lift Shaft</b>					
<b>b</b>	<b>Power Point (6 / 16 A Switch+ 16 Socket ) for Lift Shaft</b>					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size: <b>3 Core 2.5 sq. mm</b>					
	Type: Armoured cable.					
	Material of conductor: Copper					
	With insulated: XLPE <del>PVC / FR /</del> <b>FRLS/HFFR / HR / HRFR</b>					
	Colors : <del>Grey &amp; Black</del>					
	Voltage Grade: 1100 volts					
	<b>Conduit:</b>					
	NA					
	<b>Switch+Socket:</b>					
	Switch- 16 Amp.					
	Socket - 6 / 16 Amp. 3 pin					
	Switch+socket surface mounted in 1.6 mm thick GI box	<b>70</b>	Nos			
<b>b</b>	<b>Power Point (6 / 16 A Switch+ 16 Socket )</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size: <b>3 Core 2.5 sq. mm</b>					
	Type: Armoured cable.					
	Material of conductor: Copper					
	With insulated: XLPE <del>PVC / FR /</del> <b>FRLS/HFFR / HR / HRFR</b>					
	Colors : <del>Grey &amp; Black</del>					
	Voltage Grade: 1100 volts					
	<b>Conduit:</b>					
	NA					
	<b>Switch+Socket:</b>					
	Switch- 16 Amp.					
	Socket - 6 / 16 Amp. 3 pin					
	Switch+socket surface mounted in 1.6 mm thick GI box	<b>4</b>	Nos			
<b>c</b>	<b>DBs</b>					
	<u>Type:</u>					
	SPN DB - (12 WAY)	<b>1</b>	Nos.			
	Supplying and erecting single pole and neutral					
	distribution board (SPNDB) surface/flush mounted with 2 ways for incoming and 10 ways for outgoing SP MCB's on iron/ G.I. frame/wooden board as per specification					
	No.					
	SW-SWR/MCBDB					
	IP Protection: <del>IP-20 / IP 43 / IP-54</del>					
	distribution board as per specification No. SWSWR/MCB					
<b>d</b>	<b>Breakers / Isolators Starters in Enclosure</b>					
	Supply, installation, testing &					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	comissioning of MCB's / ELCB in Metal boards, as follows:					
	IP Protection: <del>IP-20</del> / IP 43 / <del>IP-54</del>					
	Inside application:					
	63A MCB in Metal boards in IP42 enclosure	4	Nos			
	<b>TOTAL OF LIFT ELECTRICAL WORK</b>					
<b>6.0</b>	<b>EARTHING SYSTEM</b>					
<b>6.1</b>	<b>Earth Pit</b>					
<b>a</b>	<b>Maintenance free earthing electrode / Chemical earthing</b>					
	Supply, Installation, Testing and commissioning of UL Certified / CPRI Tested Maintenance Free Earthing comprising of Electrode of 17.2 mm diameter Low Carbon Steel with 250 micron Molecular Copper Bonded Earthing Rod of Length 3m along with 25 kg Carbon Based environment friendly back fill Ground Enhancing compound required to fill up the excavated earth with required quantity as per specification no EA-MOBI	26	Sets			
<b>6.2</b>	<b>Earthing conductor</b>					
<b>6.2.1</b>	<b>Earthing Strip</b>					
	Providing and laying earthing conductors of GI/Cu. strip including necessary accessories, clamping to walls, cables etc. as required and interconnection between lengths as per specifications and as per good installation practice. The rate shall include all supports, accessories and hardware necessary for proper installation.					
	<b>Note:</b>					
	Joints shall be lap welded/soudered & coated with bitumen.					
	<b>G.I. Strip</b>					
<b>a</b>	25 mm x 6 mm G.I. Strip	120	Mtrs.			
<b>b</b>	40 mm x 6 mm G.I. Strip	50	Mtrs.			
<b>c</b>	50 mm x 6 mm G.I. Strip	60	Mtrs.			
	<b>CU. Strip</b>					
<b>a</b>	25 mm x 3 mm Cu. Strip	50	Mtrs.			
<b>b</b>	50 mm x 3 mm Cu. Strip	40	Mtrs.			
<b>c</b>	25 mm x 6 mm Cu. Strip	50	Mtrs.			
<b>d</b>	50 mm x 6 mm Cu. Strip	30	Mtrs.			
<b>6.2.2</b>	<b>Earthing Wires</b>					
	Supply & laying of Al / Copper conductor					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	through PVC conduits of suitable sizes thro' ducts, trays etc. The rates shall include cost of all materials & accessories including termination.					
	<b>AL. wires</b>					
<b>a</b>	8 SWG	<b>50</b>	Mtrs.			
<b>b</b>	10 SWG	<b>100</b>	Mtrs.			
	<b>CU wires</b>					
<b>a</b>	8 SWG	<b>100</b>	Mtrs.			
<b>b</b>	10 SWG	<b>40</b>	Mtrs.			
<b>6.2.2</b>	<b>Earthing Cable</b>					
	Supply & laying of single core flexible PVC insulated Copper conductor through PVC conduits of suitable sizes thro' ducts, trays etc. The rates shall include cost of all materials & accessories including termination.					
	<b>CU Cable</b>					
<b>a</b>	Single Core 2.5 Sqmm Copper Flexible cable without Conduit	<b>150</b>	Mtrs.			
<b>b</b>	Single Core 4 Sqmm Copper Flexible cable without Conduit	<b>250</b>	Mtrs.			
	<b>TOTAL OF EARTHING SYSTEM</b>					
<b>7.0</b>	<b>LIGHTNING PROTECTION</b>					
<b>7.1</b>	<b>Air Termination (As per Type of Lightning Protection System)</b>					
<b>A</b>	<b>EARLY STREAMER SYSTEM</b>					
	Lightning arrester type Controlled Early Streamer Emission system. NFC17-102 Compliant. The unit should be equipped with a central pick up rod made of tin plated copper ensuring full electrical continuity between the tip and the earth point. The unit shall be fully autonomous, collect energy from ambient electric field with a lower series of electrodes, detect lightning strikes and emit a steamer at the right time (controlled emission). A tester or remote testing facility should be available for maintenance purpose. Performances of the unit should have been tested in High Voltage Laboratory (CPRI) as well as in Real Lightning Conditions.	<b>1</b>	Nos.			
<b>7.2</b>	<b>Elevation Pole</b>					
	Elevation pole made of GI with a dia. Of 35mm to 50mm with a thread at the top to fix the unit. Base plate, mounting bracket, clamps and all required fixing accessories should also be supplied.	<b>1</b>	Nos.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
<b>7.3</b>	<b>Down Conductor</b>					
<b>a</b>	Down conductor made of Copper (Cable or strip) for tower impedance and temperature rise. It should have a minimum cross section area of 50 Sq.mm to withstand 250kA lightning current and comply with IEC 62305 standard. Note: for multistranded copper cable, the dia. For each strand should be 1.7mm minimum as per IEC.	<b>80</b>	Mtrs			
<b>b</b>	A test clamp should be installed in order to disconnect the down conductor from the earth termination for regular checks of the earth termination resistance value.	<b>1</b>	Nos.			
<b>c</b>	The base of the down conductor should be protected from accidental knocks and other damage by means of a 2meters stainless-steel or PVC protection sheath fixed to the structure.	<b>1</b>	Nos.			
<b>7.4</b>	<b>Performance Recording Equipment</b>					
<b>a</b>	Lightning Flash counter recording any lightning current comprises between 1000A to 100kA for a 8/20 micro second peak current. The item shall have been tested in a High Voltage Laboratory (CPRI).	<b>1</b>	Nos.			
<b>7.5</b>	<b>Earthing System</b>					
	<b>Consider in Earthing section</b>					
		<b>0</b>				
<b>7.6</b>	<b>Equipotential Bonding</b>					
<b>a</b>	The earth termination should be connected to the electrical earth of the building and other earth terminations with a copper cable or strip of 16 Sq.mm minimum, in order to achieve an equipotential network as per IEC 62305 standard (Surge Arrester might be added).	<b>10</b>	Mtrs			
<b>b</b>	Copper Earth Clamp, installed in the inspection pit, to connect equipotential cable/strip with the earthing system	<b>1</b>	Nos.			
	<b>TOTAL OF LIGHTNING PROTECTION</b>					
<b>8.0</b>	<b>AVIATION LIGHT</b>					
<b>8.1</b>	<b>AVIATION LIGHT FITTINGS</b>					
	Supplying & erecting aviation obstruction light consisting of yellow painted die-cast aluminium alloy housing with Integral LED					
	aviation light comprising of aluminium housing					
	with polycarbonate enclosure complete.	<b>1</b>	Nos.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
<b>8.2</b>	<b>Elevation Pole</b>					
	Elevation pole made of GI with a dia. Of 35mm to 50mm with a thread at the top to fix the unit. Base plate, mounting bracket, clamps and all required fixing accessories should also be supplied.	<b>1</b>	Nos.			
<b>8.3</b>	<b>Point Wiring for AVIATION LIGHT</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size: <b>3 Core 2.5 sq. mm</b>					
	Type: Armoured cable.					
	Material of conductor: Copper					
	With insulated: <del>XLPE PVC / FR / FRLS / HFFR / HR / HRFR</del>					
	Colors : <del>Grey &amp; Black</del>					
	Voltage Grade: 1100 volts					
	<b>Conduit:</b>					
	NA					
	Primary AVIATION LIGHT controlled by MCB (From Meter Room to Terrace)	<b>1</b>	Nos			
	<b>TOTAL OF AVIATION LIGHT</b>					
<b>9.0</b>	<b>DATA / WIFI</b>					
<b>9.1</b>	<b>IO / RJ-45 Socket</b>					
	Supply, Installation, testing & commissioning of RJ 45 socket outlet complete with back box + Face Plate & other required accessories					
<b>a</b>	<b>RJ-45 Socket (For CAT-6)</b>	<b>15</b>	Nos.			
<b>9.2</b>	<b>Cable</b>					
	Supply, Installation, testing & commissioning of CAT cables wiring through conduits.					
	<b>Note:</b>					
	1) The rate shall <b>include</b> cost of conduits.					
	Supplying & installing UTP networking Cat-6					
	cable suitable for LAN / WAN Computer networking					
	as per specification No. WG-COC/NC					
	<b>As per per Mtrs.</b>					
<b>a</b>	<b>CAT-6 UTP cable</b>	<b>450</b>	Mtrs			
<b>9.3</b>	<b>Wifi Router</b>					
	Supply, Installation, testing & commissioning of Wifi Router as per					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	specification					
	<b>In Port:</b>					
	Data					
	TELEPHONE					
	<b>Out Port:</b>					
	4 User	15	Nos.			
<b>9.4</b>	<b>Network Switch</b>					
	Supplying, fixing, and configuring Web Smart					
	Power over Ethernet Switch of 24 Ports on provided rack or as directed as per specification					
	No. WG-NWC/ENS	2	Nos.			
	<b>TOTAL OF DATA / WIFI</b>					
<b>10.0</b>	<b>TELEPHONE</b>					
<b>10.1</b>	<b>Telephone / Intercom Point Wiring</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size (Run): 1-Pair of 0.5 sqmm					
	Type: Telephone wire					
	Material of conductor: Copper					
	With insulated: PVC / FR / FRLS/ HFFR / HR / HRFR					
	<b>Conduit:</b>					
	Size: 20 mm / 25 mm Dia.					
	Mechanical Strength: (LMS ) for Brack Wall, (MMS) for RCC Wall, (HMS) for RCC Slab					
	Material: PVC / FRLS PVC / GI (For Open)					
	Colors :Grey & Black					
	with all accessories (as per IS 9537 part 3)					
	<b>RJ-11 Socket</b>					
	RJ-11 the channel socket outlet point.					
	<b>Switch Box</b>					
	RJ 11 mounted in 1.6 mm thick GI box & Modular Front Plate.					
a	Telephone Point Wiring	1	Nos			
b	Intercom Point Wiring	60	Nos			
<b>10.2</b>	<b>Telephone Cable</b>					
	Supply, Installation, testing &					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	commissioning of cables for telephone / hook-up wire through PVC conduit with pull box/ junction box & all accessories .					
	<u>Inside the Shaft</u>					
	<b>Cable</b>					
<b>a</b>	Supplying & erecting Jelly filled armoured					
	telephone cable 20 pair with 0.5 mm dia. laid					
	in provided trench as per specification No. WGTW	<b>200</b>	Mtrs			
	<b>Conduit</b>					
<b>b</b>	20mm.dia. (MMS) FRLS PVC Conduit	<b>200</b>	Mtrs			
	<u>From Shaft to LV DB</u>					
	<b>Cable</b>					
<b>b</b>	Supplying & erecting telephone cable 2 pair	<b>1500</b>	Mtrs			
	with 0.5 mm dia. laid in provided PVC casing /					
	conduit as per specification No. WG-TW					
	<b>Conduit</b>					
<b>d</b>	20mm.dia. (MMS) PVC	<b>300</b>	Mtrs			
<b>10.3</b>	<b>MDF (Main Distribution Frames)</b>					
	Supply, Installation,testing & commissioning of MDF as per following specification					
<b>a</b>	10 Pair	<b>15</b>	Nos.			
<b>b</b>	Supplying, erecting & commissioning MDF					
	Box 60 x 60 pairs as per specification No. WGTW	<b>2</b>	Nos.			
<b>10.4</b>	<b>EPABX</b>					
	Supply, Installation,testing & commissioning of EPABX as per following specification					
<b>a</b>	Supplying and installing, testing &					
	commissioning of Digital (Hybrid) type EPABX of 8 x 20 (4 Digital+ 16 analog) extensions suitable upto 120 extensions					
	48 - Hybrids / Analog-Extensions					
	Expandable up to 48 Trunk & 128 Extensions by adding cabinets	<b>2</b>	Nos.			
<b>10.5</b>	<b>Extension Card</b>					
<b>a</b>	Supply, Installation,testing & commissioning of Extension Card as per following specification					
	4 - CO/ Trunk					
	16 - Hybrids / Analog-Extensions	<b>2</b>	Nos.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>TOTAL OF DATA &amp; VOICE</b>					
<b>11.0</b>	<b>TV SYSTEM</b>					
<b>11.1</b>	<b>TV Point Wiring</b>					
	Supply, laying, testing & commissioning of point wiring as per specification;					
	<b>Wires:</b>					
	Size : RG-6 coaxial cable					
	Type: TV wire					
	Material of conductor: Copper					
	With insulated: PVC /FR /FRLS/ HFFR /HR /HRFR					
	<b>Conduit:</b>					
	Size: 20 mm / 25 mm Dia.					
	Mechanical Strength: (LMS ) for Brack Wall, (MMS) for RCC Wall, (HMS) for RCC Slab					
	Material: PVC /FRLS PVC /GI (For Open)					
	Colors : <del>Grey &amp; Black</del>					
	with all accessories (as per IS 9537 part 3)					
	<b>RTV Socket</b>					
	TV the channel socket outlet point.					
	<b>Switch Box</b>					
	TV Socket mounted in 1.6 mm thick GI box & Modular Front Plate.					
a	TV Point Wiring	5	Nos			
<b>11.2</b>	<b>Cable</b>					
	Supply and laying of RG 6/ 11 U tinned copper co-axial cable with polythene insulation with PVC Conduits 25mm/32 mm fixed to walls/Ceiling with Spacers & saddles.					
	<b>Inside the Shaft</b>					
a	<b>RG-11 coaxial cable</b>	50	Mtrs			
	<b>From Shaft to LV DB</b>					
b	<b>RG-6 coaxial cable</b>	150	Mtrs			
<b>11.3</b>	<b>Splitters</b>					
	Supply and installation of splitters in die cast Aluminium casing.					
	<b>Inside the Shaft</b>					
a	3-way splitters	2	Nos.			
<b>11.4</b>	<b>Antenna (TATA SKY or Other )</b>					
	Supply and installation of Antenna.					
	Antenna	5	Nos.			



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
<b>11.5</b>	<b>Set TOP Box</b>					
	Supply and installation of Set TOP Box					
<b>a</b>	Set TOP Box	<b>5</b>	Nos.			
	<b>TOTAL OF TV SYSTEM</b>					
<b>12.0</b>	<b>POWER OUTLETS</b>					
<b>12.1</b>	<b>Breakers / Isolators Starters in Enclosure</b>					
	<b>MCCB's in Metal boards</b>					
	MCCB with Neutral Link, Thermal Magnetic Release, Rotary Handle in sheet metal enclosure & with Cable Gland Box & all required accessories.					
<b>a</b>	Providing & erecting 3 Pole MCCB of 200A,415V capacity with S.C. rating 25 kA	<b>1</b>	Nos			
	(Ics=100% of Icu) thermal and magnetic setting					
	with provided leads on iron /G.I. frame as per					
	specification no. SW-SWR/MCCB					
<b>b</b>	Providing & erecting 3 Pole MCCB of 315/400A, 415V capacity with S.C. rating 36 kA (Ics=100% of Icu), thermal and magnetic	<b>2</b>	Nos			
	setting with provided leads on iron/G.I. frame					
	as per specification No. SW-SWR/MCCB					
	<b>MCB's in Metal boards</b>					
	Supply, installation, testing & commissioning of MCB's in Metal boards, as follows:					
	<u>Inside application:</u>					
<b>a</b>	40/63A, TPN, MCB in Metal boards in IP42 enclosure	<b>10</b>	Nos			
<b>b</b>	16/25A/32A, TPN, MCB in Metal boards in IP42 enclosure	<b>20</b>	Nos			
	<u>Outside application:</u>					
<b>a</b>	40/63A, TPN, MCB in Metal boards in IP55 enclosure	<b>5</b>	Nos			
<b>b</b>	16/25A/32A, TPN, MCB in Metal boards in IP55 enclosure	<b>10</b>	Nos			
	<b>RCBO's in Metal boards (For VRV ODU's)</b>					
	<u>Inside application:</u>					
<b>a</b>	32A, 4P, ELCB 100mA in Metal boards in	<b>4</b>	Nos			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	IP42 enclosure					
<b>b</b>	40A, 4P, ELCB 100mA in Metal boards in IP42 enclosure	<b>6</b>	Nos			
<b>c</b>	63A, 4P, ELCB 100mA in Metal boards in IP42 enclosure	<b>8</b>	Nos			
	<u>Outside application:</u>					
<b>a</b>	32A, 4P, ELCB 100mA in Metal boards in IP55 enclosure	<b>4</b>	Nos			
<b>b</b>	40A, 4P, ELCB 100mA in Metal boards in IP55 enclosure	<b>2</b>	Nos			
<b>c</b>	63A, 4P, ELCB 100mA in Metal boards in IP55 enclosure	<b>4</b>	Nos			
	<b>ISOLATOR in Metal boards</b>					
<b>a</b>	Supplying erecting and marking Four pole isolators only switch version of miniature circuit breakers of 63A in provided distribution board.	<b>5</b>	Nos			
<b>b</b>	Supplying erecting and marking Four pole isolators only switch version of miniature circuit breakers of 80/100A in provided distribution board.	<b>5</b>	Nos			
	<b>TOTAL OF POWER OUTLETS</b>					
<b>13.0</b>	<b>SOLAR SYSTEM</b>					
	Supply installation of the Solar sytem with required all the accessories solar panels,structure,cable,converter etc.					
	Panel Specifications.					
	Quotation for the 11KW					
	1.Mono crystalline silicon Cells					
	2.Have less shade tollerant					
	3.More temprature Sensitive					
<b>a</b>	Mono crystalline silicon Cells	<b>50</b>	Nos			
<b>b</b>	Batteries (We are not taking the Battery Backup,As we are going with Online System)		Set			
<b>c</b>	Other accessories	<b>1</b>	Nos			
	<b>TOTAL OF POWER OUTLETS</b>					
<b>14.0</b>	<b>MISCELLENOUS</b>					
<b>14.1</b>	<b>Rubber Mats.</b>					
	Supply & Installation of 1.1KV Grade Rubber Mats in front of all the Panels.	<b>20</b>	Sqm			
<b>14.2</b>	<b>Danger Notice Board</b>					
	Supply & Installation of Danger Notice Board etc (Danger Board 440 V / Shock treatment instruction charts in Hindi &	<b>1</b>	Job			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	English in good quality frame & glass cover.)					
<b>14.3</b>	<b>First aid boxes</b>					
	First aid boxes with all standard contents.	<b>1</b>	Set			
<b>14.4</b>	<b>Temporary lighting &amp; power arrangement</b>					
	Arranging temporary Power & Lighting for all agencies to work including suitable protection through MCBs/ELCBs/MCCBs & wiring & cabling. The rate shall include statutory approval from <b>Local Electrical Inspectorate &amp; other required satatutory bodies</b> , preparation of AS-BUILT drawings, Testing of the installation & preparaition of test report as required by statutory bodies. Note: <b>The rate to include cost of suitable temporary Lighting for all areas as per requirement during work.</b>	<b>1</b>	Job			
<b>14.5</b>	<b>Electrical liasoning work</b>					
	Lump sump fees of Electrical liasoning work at site for the 7th floor, necessary approval from Electricity board / local authority / PWD	<b>1</b>	Job			
	<b>TOTAL OF MISCELLENOUS</b>					
<b>15.0</b>	<b>DG SET</b>					
	<b>Diesel Generator</b>					
	Supplying, Erecting and Commissioning of					
	Diesel generating set with alternator of 500					
	kVA output continuous rating, 3 Phase, 415 V,					
	50c/s 0.8 p. f. A.C a totally enclosed air cooled /					
	liquid cooled multi-cylinder diesel engine					
	developing suitable BHP at 1500 rpm with 10%					
	overload for 1 hour in 12 hours, alongwith					
	standard accessories, self-excited, self-regulated,					
	screen protected alternator with static excitation					
	system running at 1500 RPM as per IS 4722-					
	2001 with voltage regulation +/- 5 %. Both the					
	engine and alternator direct coupled on a					
	common fabricated steel base frame and					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	mounted on anti-vibrating pads with standard					
	control panel comprising of meters, switchgears,					
	indicators connected with suitable wires/cables,					
	the complete set enclosed in composite Acoustic					
	enclosure as fully assembled integral unit made					
	of 16 SWG CRCA Sheet, sound absorbing material to restrict sound level upto 75 dB at 1.0					
	m, provided with first filling of oil, diesel etc.					
	and obtaining necessary approval from Electrical Inspector as per specification no. GEN-DG					
	Each 3405391 16017 3421408					
	Note:- 1) DG Set rating for altitudes more than 150					
	m above					
	mean sea level shall be de-rated at 3.5 % for					
	every 300 m above 150 m mean sea level.					
	2) In case of new DG set, if AMF/SYNC panel					
	is to be used in lieu of standard panel, reduce					
	rate by 10% of the cost of material of new AMF panel/SYNC panel.					
	3) For all the Engines, the emission standards/norms shall meet applicable					
	pollution control board norms as amended by					
	Government.	2	Nos			
	<b>AMF panel</b>					
	Supplying, erecting, testing and commissioning					
	of Microprocessor based AMF panel suitable					
	for Diesel Generating Set of upto 500 kVA capacity Single/Three phase, 230/415 Volts,					
	50Hz A.C. with all standard features, safeties etc					
	as per specification no. GEN-AMF.	2	Nos			
	<b>Synchronizing Panel</b>					
	Supplying, erecting, testing and commissioning					
	of Microprocessor based Generator Control					
	Unit (Synchronization panel) panel suitable for					
	Diesel Generating Set of 500 kVA					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	capacity					
	Three phase, 415 Volts, 50Hz A.C. with all standard features and safeties etc as per specification no. GEN-SYNC.	1	Nos			
	<b>TOTAL OF DG SET</b>					
<b>8.0</b>	<b>PLUMBING WORK</b>					
<b>A</b>	<b>INTERNAL WATER SUPPLY SYSTEM:</b>					
1	<b>Work within Toilet/Pantry/Kitchen area Concealed piping (Water Supply Domestic)</b>					
	<b>CPVC Pipe (Chlorinated Polyvinyl Chloride)</b>					
	<b>SDR 11:</b> Pipes to be used from 1/2 Inch to 2 Inch (7 Bar @ 82 Deg C and 28 Bar @ 23 Deg C)					
	<b>Schedule 80:</b> Pipe to be used from 2-1/2 Inch to 6 Inch.					
	Providing and fixing CPVC (Chlorinated Poly Vinyl Chloride) water supply pipes . Pipes shall be joined using solvent welded CPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between CPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only CPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Cost shall be inclusive of insulation for hot water pipe. and also Cost shall be inclusive of pipe length whether Geyser installed in Shower area or in plumbing shaft.					
	Cost shall be inclusive of Making maximum of 7.5 x 7.5 cm chase in wall and floors for the pipe, making good the same by using 1:2 cement mortar over the wire mesh and providing protection to embedded pipes and fittings (in wall chase) by wrapping two layers of 400 micron polythene sheet including proper overlaps on joints complete as required.					
a	25 mm dia	260	Rmt			
b	20 mm dia	1255	Rmt			
c	15 mm dia	790	Rmt			
2	<b>Work within Toilet/Pantry/Kitchen area Concealed piping (Water Supply Flushing)</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>CPVC Pipe (Chlorinated Polyvinyl Chloride)</b>					
	<b>SDR 11:</b> Pipes to be used from 1/2 Inch to 2 Inch (7 Bar @ 82 Deg C and 28 Bar @ 23 Deg C)					
	<b>Schedule 80:</b> Pipe to be used from 2-1/2 Inch to 6 Inch.					
	Providing and fixing CPVC (Chlorinated Poly Vinyl Chloride) water supply pipes . Pipes shall be joined using solvent welded CPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between CPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only CPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Cost shall be inclusive of insulation for hot water pipe. and also Cost shall be inclusive of pipe length whether Geyser installed in Shower area or in plumbing shaft.					
	Cost shall be inclusive of Making maximum of 7.5 x 7.5 cm chase in wall and floors for the pipe, making good the same by using 1:2 cement mortar over the wire mesh and providing protection to embedded pipes and fittings (in wall chase) by wrapping two layers of 400 micron polythene sheet including proper overlaps on joints complete as required.					
a	40 mm dia	1010	Rmt			
b	32 mm dia	750	Rmt			
3	<b>Work within Plumbng Duct (Water Supply Domestic )</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV,with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	50 mm dia	48	Rmt			
b	40 mm dia	96	Rmt			
c	32 mm dia	102	Rmt			
d	25 mm dia	376	Rmt			
4	<b>Work within Plumbng Duct (Water Supply Flushing)</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV,with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	65 mm dia	96	Rmt			
b	50 mm dia	96	Rmt			
c	40 mm dia	378	Rmt			
d	32 mm dia	3	Rmt			
5	<b>Work within Terrace Loop (Water Supply Domestic )</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV, with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	80 mm dia	125	Rmt			
6	<b>Work within Terrace Loop (Water Supply Flushing)</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV, with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	80 mm dia	125	Rmt			
7	<b>VALVES in Terrace &amp; Plumbing Duct (For Domestic and Flushing)</b>					
7.1	<b>Ball Valve</b>					
	Providing and fixing ball valve including flanges / union, etc. complete as required.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Brass					
a	20 mm n.b	4	NOS.			
b	25 mm n.b	45	NOS.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
c	32 mm n.b	4	NOS.			
d	40 mm n.b	45	NOS.			
e	50 mm n.b	4	NOS.			
7.2	<b>Butterfly Valve (Terrace Floor)</b>					
	Providing & fixing butterfly valve (Body : Grey Cast Iron, Shaft : SS, Disc : SG Iron (Rilson coated), Liner : HT - EPDM) (upto 150mm dia with hand lever operation & above with gear box operation). Including rubber gasket, flanges, nuts, bolts, washers & painting complete as required.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Cast Iron					
a	65 mm n.b	4	NOS.			
7.3	<b>Air Vent valve (Terrace Floor PIPE LOOP)</b>					
	Providing & fixing Auto Air vent for cold water supply risers.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Cast Iron					
a	15 mm n.b	8	NOS.			
7.4	<b>P.R.V.</b>					
	Providing and fixing Pressure Reducing valves complete as directed by engineer-in-charge. Contractor to set pressure as per instructions from consultant during execution.					
	<b>Note: Set of P.R.V. of including 5 nos. x Ball / Butterfly Valve + 2 nos. x P.R.V.</b>					
	Tested pressure = 25 Kg / Sqcm					
	Material : Forged Brass / Bronze					
a	40 mm n.b	5	NOS.			
b	50 mm n.b	3	NOS.			
c	65 mm n.b	6	NOS.			
	<b>SUB-TOTAL (Internal Water Supply System)</b>					
<b>B</b>	<b>INTERNAL SEWAGE DRAINAGE SYSTEM:</b>					
	<b>Work with in TOILET / Kitchen</b>					
1	<b>UPVC Floor traps (plain / multi)</b>					
	Supply, Installation, Testing and Commissioning					
	of upvc Floor traps (plain / multi) of self cleansing design					
	with water seal not less than 25mm					
	with or without vent, including setting the trap					
	in cement concrete <b>M-15</b> as per					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	specifications etc. complete.					
	Rate to include making of opening in floor, marble / tiles, for fixing					
1.1	<b>Floor traps (for Toilet / Kitchen)</b>					
a	Trap with 110mm inlet & 75mm outlet.	150	NOS.			
1.2	<b>Multifloor traps (for Toilet / Kitchen)</b>					
a	Trap with 110mm inlet & 75mm outlet.	200	NOS.			
2	<b>SWR PVC pipes (Type-B) (For Pipes in Toilets /Kitchen Area)</b>					
	Supply, Installation, Testing and Commissioning of UPVC- SWR pipes confirming					
	to IS : 13592, and confirming to IS : 4985 (Pipe Class III - 6 kg / sq.cm)					
	and all necessary fittings such as 45 or 90 deg. bends, Tee's, Y's, including					
	solvent cement jointing and testing with setting					
	the pipes in cement concrete <b>M-15</b> as per specifications					
a	50 dia (Type B)	750	Rmt			
b	75 dia (Type B)	1000	Rmt			
c	100 dia (Type B)	750	Rmt			
	<b>Work with in plumbing duct</b>					
3	<b>SWR PVC pipes (Typ-B) (For Pipes in Shafts, Soil, Waste, Vent, etc.)</b>					
	Supply Installation Testing and Commissioning					
	SWR- UPVC pipes and all necessary fittings such					
	as 45 or 90 deg. bends, Tee's, Y's, Cows including fixing					
	of pipe support with PVC coated GI clamps on					
	GI brackets and ring jointing with testing of pipes and					
	making the joints leak proof and as directed by					
	Engineer in charge etc, complete					
a	75 dia (Type B)	336	Rmt			
b	100 dia (Type B)	336	Rmt			
c	150 dia (Type B)	336	Rmt			
	<b>Work for Diverted Pipe</b>					
4	<b>Work within Basement Toilets &amp; Ground Toilet to STP (BY PUMP)</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV, with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
c	65 mm dia	110	Rmt			
5	<b>C.I. pipes</b>					
	Supply Installation Testing and Commissioning					
	"LA" class C.I. tested heavy pipe including fitting					
	indoor with heavy clamps and M S hot dip galvanized brackets					
	or in MS trench on clamp.					
	<b>Work within Ground ceiling shaft to STP &amp; Work within STP to Municipal line (in case of STP nor worked)</b>					
a	160 dia	110	Rmt			
	<b>SUB-TOTAL (Internal Sewage Drainage System)</b>					
<b>C</b>	<b>INTERNAL STORM DRAINAGE SYSTEM:</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
1	<b>UPVC Floor traps</b>					
	Supply, Installation, Testing and Commissioning					
	of upvc Floor traps of self cleansing design					
	with water seal not less than 25mm					
	with or without vent, including setting the trap					
	in cement concrete <b>M-15</b> as per specifications etc. complete.					
	Rate to include making of opening in floor, marble / tiles, for fixing					
1.1	<b>Floor Drain (for service area drainage)</b>					
a	Trap with 110mm inlet & 75mm outlet.	22	NOS.			
1.2	<b>Floor Drain (for service area drainage)</b>					
a	Trap with 110mm inlet & 75mm outlet.	40	NOS.			
2	<b>Rain water `Khurras (at Terrace )</b>					
	Supply, Installation, Testing and Commissioning of rain water `Khurras' required depth with lead flashing around the pipe with one piece lead sheet of 3 mm thick set on a layer of cold bitumen.	16	NOS.			
3	<b>PVC Heavy grating (at Terrace )</b>					
	Supply, Installation, Testing and Commissioning of					
	Heavy grating at the collection point of rain water pipe on terrace with material and labour etc. complete as per directions of engineer-in-charge.					
a	100 mm for 75 dia Pipe	62	NOS.			
b	230 mm for 150 dia Pipe	16	NOS.			
4	<b>SWR PVC pipes (Typ-B) (Work with in Service area drainage)</b>					
	Supply, Installation, Testing and Commissioning of					
	SWR-UPVC pipes and all necessary fittings such					
	as 45 or 90 deg. bends, Tee's, Y's, access pipe including fixing pipe					
	support with PVC coated GI clamps on GI brackets and					
	ring / solvent jointing with testing of pipes and making the					
	joints leak proof and as directed by Engineer in charge					
	etc complete.					
a	75 dia	33	Rmt			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
5	<b>SWR PVC pipes (Typ-B) (Work with in plumbing duct)</b>					
	Supply, Installation, Testing and Commissioning of					
	SWR-UPVC pipes and all necessary fittings such					
	as 45 or 90 deg. bends, Tee's, Y's, access pipe including fixing pipe					
	support with PVC coated GI clamps on GI brackets and					
	ring / solvent jointing with testing of pipes and making the					
	joints leak proof and as directed by Engineer in charge					
	etc complete.					
a	150 dia	1392	Rmt			
6	<b>SWR PVC pipes (Typ-B) (Work with in Basement Floor drainage)</b>					
	Supply, Installation, Testing and Commissioning of					
	SWR-UPVC pipes and all necessary fittings such					
	as 45 or 90 deg. bends, Tee's, Y's, access pipe including fixing pipe					
	support with PVC coated GI clamps on GI brackets and					
	ring / solvent jointing with testing of pipes and making the					
	joints leak proof and as directed by Engineer in charge					
	etc complete.					
a	75 dia	260	Rmt			
	<b>Work for Diverted Pipe</b>					
7	<b>C.I. pipes (Work within Basement Ceiling To Ground Chamber)</b>					
	Supply Installation Testing and Commissioning					
	"LA" class C.I. tested heavy pipe including fitting					
	indoor with heavy clamps and M S hot dip galvanized brackets					
	or in MS trenche on clamp.					
a	210 dia	300	Rmt			
8	<b>Work within 3rd Basement to ground for Car Pit, Sump &amp; Plumbing shaft drainage (BY PUMP)</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV, with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	50 mm dia	520	Rmt			
	<b>SUB-TOTAL (Internal Storm Drainage System)</b>					
<b>D</b>	<b>External Water Supply:</b>					
1	<b>G.I. pipe</b>					
1.1	<b>Work within Muncipal Main Line to UG Tank</b>					
	Providing and laying in trenches 80 mm dia. heavy grade having embossed as ISI Mark galvanised iron pipes of 10.15 kg/metre necessary fitting remaking good the demolished portion with filling trenches and with primer of anti-corrosive oil paint , 2 coats complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete.	90	Rmt			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
1.2	<b>Work within UG Tank to OH Tank (Domestic &amp; Flushing)</b>					
	Providing and laying in trenches 50 mm dia. heavy grade having embossed as ISI Mark galvanised iron pipes of 6.33 kg/metre necessary fitting remaking good the demolished portion with filling trenches and with primer of anti-corrosive oil paint , 2 coats complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete.					
a	2nd Basement	100	Rmt			
b	1st Basement	12	Rmt			
c	Ground Floor	12	Rmt			
d	1st Floor (1% charges)	12	Rmt			
e	2nd Floor (2% charges)	12	Rmt			
f	3rd Floor (3% charges)	12	Rmt			
g	4th Floor (4% charges)	12	Rmt			
h	5th Floor (5% charges)	12	Rmt			
i	6th Floor (6% charges)	12	Rmt			
j	7th Floor (6.5% charges)	12	Rmt			
k	8th Floor (7% charges)	12	Rmt			
l	9th Floor (7.5% charges)	12	Rmt			
m	10th Floor (8% charges)	12	Rmt			
n	11th Floor (8.5% charges)	12	Rmt			
o	12th Floor (9% charges)	12	Rmt			
p	Terrace Floor (9.5%Charges)	40	Rmt			
2	<b>Water Meter</b>					
a	Providing and fixing 80mm diameter water meter with non-return valve including strainer, sockets/ union nut and including water meter box making locking arrangement and lock. [Without chamber].	1	NOS.			
3	<b>Water Meter chamber</b>					
a	Brick masonry chamber with 230 thick walls in C.M. 1:5, resting on 150 thick C.C. M 15 bed, 12 thick cement plaster inside and outside in C.M. 1:3. Cost shall be inclusive of excavation in all kind of soil, dewatering, backfilling, ramming & removing the surplus excavated material and making good the same complete as required and satisfaction of the Project Manager.	1	NOS.			
4	<b>Frame and cover for Water Meter chamber</b>					
	Frame and cover with locking					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	arrangement etc. complete as specified.					
c	C.I. Frame and cover size 900mm x 450mm ( Heavy duty)	1	NOS.			
	<b>SUB - TOTAL EXTERNAL WATER SUPPLY</b>					
<b>E</b>	<b>EXTERNAL SEWAGE DRAINAGE SYSTEM:</b>					
<b>1</b>	<b>SWR uPVC Foam Core Pipes</b>					
	<b>Work within Basement RCC Pardi to Municipal Line</b>					
	Providing , laying and fixing ,jointing Supreme Eco- drain 200 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees tees, coupler etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete.	20	Rm.			
<b>2</b>	<b>SW gully trap</b>					
	Providing and fixing stoneware <b>Ceiling suspended gully trap</b> at ceiling level. Making necessary connections & providing water tight C.I./D.I. cover with frame of suitable size.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	450 x 450mm chamber with 150 x 100mm size 'P' trap	4	Nos.			
<b>3</b>	<b>IC Chamber / Inspection Chamber</b>					
	Providing and constructing Brick Masonry inspection Chamber 90cm x 45cm including 1:4:8 C.C foundation, 1:2:4 C.C.channels/half round glazed stoneware pipe channel, salt glazed stone-ware intercepting trap with rodding pipe set in	3	Nos.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	1:4:8 cement concrete block, brick masonry plastering inside and Outside, with C.I. lead cover of 75 kg with frame fixed in cement concrete.					
	Contractor shall submit the structural design and drawings for the approval of Project Manager prior to execution.					
4	<b>Sewer Trap</b>					
	Providing, laying, testing and commissioning of Sewer Trap in CC 1:2:4 as diverted and as specified.					
a	Sewer Trap (150 x 230mm )	1	Nos.			
	<b>SUB-TOTAL (EXTERNAL SEWAGE DRAINAGE SYSTEM)</b>					
<b>F</b>	<b>EXTERNAL STORM DRAINAGE SYSTEM:</b>					
1	<b>SWR uPVC Foam Core Pipes</b>					
1.1	<b>Work within Ground Floor all round drainage</b>					
	Providing , laying and fixing ,jointing Supreme Eco- drain 160 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees , coupler, etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete.	250	Rm.			
1.2	<b>Work within Basement RCC Pardi to Harvesting Tank</b>					
	Providing , laying and fixing ,jointing Supreme Eco- drain 200 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees tees, coupler etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete.	100	Rm.			
2	<b>Rain Water Chamber</b>					
	Designing and constructing brick masonry inspection chamber of the following sizes in brick work of class 75 in cement mortar 1:5 (1 cement:5 fine sand), R.C.C. at top level with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm. nominal size) embeded with frame for manhole, RCC foundation slab. 1:2:4 mix					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	(1 cement : 2 coarse sand:4 graded stone aggregate 40 mm nominal size) both inside and outside of plastering 12 mm thick with cement motar 1:3 (1 cement : 3 coarse sand) with a floating coat of neat cement on inside face, proper water proofing to ensure no ground water seepage in the manhole, Poly propylene (conforming to ASTM D - 4101) foot rests (meeting the 224 kg load requirement as per IS 5455) at 300 mm spacing, benching and making channels with 1:2:4 cement concrete neatly finished, including necessary centering and shuttering, reinforcement, excavation, in all kind of soil, dewatering, refilling, watering, ramming and removing the surplus excavated earth, making good the same complete as required.					
	Contractor shall submit the structural design and drawings for the approval of Project Manager prior to execution.					
a	450 x 900 x upto a depth of 1.2 m	10	Nos.			
b	600 x 600 x upto a depth of 1.2 m	18	Nos.			
<b>3</b>	<b>Frame and cover for Rain Water Chamber</b>					
	Frame and cover with locking arrangement etc. complete as specified.					
	<del>RCC / SFRC / FRP / MS / CI / DI</del>					
a	450 x 900 mm, Medium Duty	12	NOS.			
b	600 x 600 mm, Medium Duty	18	NOS.			
<b>4</b>	<b>STORM DRAINAGE CHANNEL</b>					
	Providing & constructing stormwater CHANNEL of 230 mm thick brick masonry work in 1:5 cement mortar, plastering smooth inside & rough outside in 1:3 cement sand mortar, 150 mm thick PCC bed in 1:3:6 PCC, including excavations, dewatering, shoring and strutting, backfilling & 230 mm wide PCC curb in 1:2:4 PCC at top of channel for fixing the Heavy Duty MS / RCC grating etc. complete.					
a	600mm WIDE upto maximum depth of 1.2 m.	150	Rmt			
<b>5</b>	<b>CHANNEL Grating</b>					
	CHANNEL Grating complete as specified.					
	<del>RCC / SFRC / GRP / MS / CI / DI</del>					
a	600mm WIDE mm (Heavy Duty / Medium Duty / Light Duty)	150	Rmt			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>SUB-TOTAL (EXTERNAL STORM DRAINAGE SYSTEM)</b>					
<b>G</b>	<b>TANKS</b>					
	<b>U.G. TANK</b>					
1	<b>G.I. Puddle flanges</b>					
	Supplying & fixing in position galvanised iron puddle flanges of approx. 60 cm length with flange on one end and welded to mild steel plate (8mm thick) in the centre etc. complete as directed by engineer-in-charge					
a	150 mm dia	10	Nos.			
b	100 mm dia	10	Nos.			
c	80 mm dia	10	Nos.			
d	65 mm dia	10	Nos.			
e	50 mm dia	10	Nos.			
f	25 mm dia	10	Nos.			
2	<b>Manhole Covers (for domestic, Flushing &amp; Fire Tank)</b>					
	Providing and fixing Circular type Manhole Covers with frame of approved make of 525 mm dia including all necessary supports, grouting of the frame in RCC, etc. complete as directed by engineer-in-charge.					
	<del>RCC / SFRC / FRP / MS / CI / DI</del>					
a	600 mm, Medium Duty	6	NOS.			
3	<b>Vapour vent pipes (for Domestic &amp; Flushing Tank)</b>					
	Supply & installation of vapour vent pipes with Tee, Elbow, Pvc Mosquito proof jali including required jointing material etc. complete.					
	<b>(1 set = 2" pipe + 1 Tee + 2 Elbow + 2 mosquito jali)</b>					
a	50 mm n.b.	6	Rmt			
4	<b>Overflow and Drain pipes ("C" class G.I. pipe) (for Domestic &amp; Flushing Tank)</b>					
	Supply & installation of overflow and drain pipes of 50mm with Elbow, Plug, Pvc Mosquito proof jali including required jointing material etc. complete.					
	for under ground and over head water tanks					
a	80 mm n.b.	50	Rmt			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
5	<b>Float Valve (for Domestic &amp; Flushing Tank)</b>					
	Providing and fixing in position of approved quality high pressure rated Gun Metal Float Valve with copper ball float and brass rods of required length of the following sizes:					
	Tested pressure = 15 Kg / Sqcm					
	Material : Gun Metal					
c	80 mm n.b	2	NOS.			
	<b>O.H. TANK</b>					
6	<b>G.I. Puddle flanges</b>					
	Supplying & fixing in position galvanised iron puddle flanges of approx. 60 cm length with flange on one end and welded to mild steel plate (8mm thick) in the centre etc. complete as directed by engineer-in-charge					
a	150 mm dia	10	Nos.			
b	100 mm dia	10	Nos.			
c	80 mm dia	10	Nos.			
d	65 mm dia	10	Nos.			
e	50 mm dia	10	Nos.			
f	25 mm dia	10	Nos.			
7	<b>Manhole Covers (for domestic, Flushing &amp; Fire Tank)</b>					
	Providing and fixing Circular type Manhole Covers with frame of approved make of 525 mm dia including all necessary supports, grouting of the frame in RCC, etc. complete as directed by engineer-in-charge.					
	<del>RCC / SFRC / FRP / MS / CI / DI</del>					
b	600 mm, Medium Duty	6	NOS.			
8	<b>Vapour vent pipes (for Domestic, Flushing &amp; Fire Tank)</b>					
	Supply & installation of vapour vent pipes with Tee, Elbow, Pvc Mosquito proof jali including required jointing material etc. complete.					
	<b>(1 set = 2" pipe + 1 Tee + 2 Elbow + 2 mosquito jali)</b>					
a	50 mm n.b.	6	Rmt			
9	<b>Overflow and Drain pipes ("C" class G.I. pipe) (for Domestic &amp; Flushing Tank)</b>					
	Supply & installation of overflow and drain pipes of 50mm with Elbow, Plug, Pvc Mosquito					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	proof jali					
	including required jointing material etc. complete.					
	for under ground and over head water tanks					
a	80 mm n.b	20	Rmt			
10	<b>Butterfly Valve (OH Tank outlet &amp; Drain)</b>					
	Providing & fixing butterfly valve (Body : Grey Cast Iron, Shaft : SS, Disc : SG Iron (Rilson coated), Liner : HT - EPDM) (upto 150mm dia with hand lever operation & above with gear box operation). Including rubber gasket, flanges, nuts, bolts, washers & painting complete as required.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Cast Iron					
a	65 mm n.b	2	NOS.			
b	80 mm n.b	2	NOS.			
11	<b>Y-Strainer (For OH Tank outlet)</b>					
	Providing & fixing Y-Strainer complete as required.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Cast Iron					
a	65 mm n.b	1	NOS.			
b	80 mm n.b	1	NOS.			
c	100 mm n.b		NOS.			
12	<b>G. M. S. Ladder (From Terrace to O.H. Tank)</b>					
	Providing and laying factory fabricated G. M. S. Ladder with 3 coats of zinc rich epoxy paint over a coat primer etc complete as directed.					
a	4 m long x 450 mm wide	2	Nos.			
	<b>SUB - TOTAL (TANKS)</b>					
<b>H</b>	<b>PUMPS AND EQUIPMENT</b>					
1	<b>Water Transfer Pump for Single O.H. Tank</b>					
	<b>PUMPS:</b> Providing, installation, testing and commissioning of totally Stainless Steel pumps having 304 SS casing, Bronze impellers, SS shaft and driven by suitable HP , 415 Volts, 50 cycles, AC 3 phase motor. Each pump should be capable of delivering as req demand, complete with all accessories, suction/discharge butterfly or gate valves, suction strainers, discharge non-return valves, pressure gauges, etc.					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	complete and as directed.					
	<b>PANELS:</b> Providing, installation, testing and commissioning of sheet steel clad wall mounting control panel having suitably rated incoming isolating switch incoming voltmeter with selector switch and fuses. DOL starter with hand reset overload cum single-phase preventor type relay, ammeter to read current in any one phase. OFF/AUTO/MANUAL selector switch, pump changeover facility, dry run presenter switch and NHT Italian make and equivalent level switch for automatic control of pump and electronic toggle relay for automatic alternating of pumps.					
	Providing, installation, testing and commissioning of PVC armoured/ sheathed/insulated copper cables of the required ratings (as approved) with terminations, installation, accessories, cable trays, saddles, clamps, complete in all respects to all Plumbing Equipment from the above Power Panel located in the Pump room. Cost shall be inclusive of Supporting angle for Submersible pump.					
a	<b>Domestic Water Transfer Pump</b>					
	1 Set = 2 Nos. Pump (1 Working + 1 Standby)					
	TYPE OF PUMP = <del>Centrifugal</del> / or Submersible pump					
	Pump Capacity / Discharge = 170 lpm					
	outlet Head = 100 mwc	1	Sets.			
b	<b>Flushing Water Transfer Pump</b>					
	1 Set = 2 Nos. Pump (1 Working + 1 Standby)					
	TYPE OF PUMP = <del>Centrifugal</del> / or Submersible pump					
	Pump Capacity / Discharge = 250 lpm					
	outlet Head = 100 mwc	1	Sets.			
c	<b>STP Treated Water Transfer Pump</b>					
	1 Set = 2 Nos. Pump (1 Working + 1 Standby)					
	TYPE OF PUMP = <del>Centrifugal</del> / or Submersible pump					
	Pump Capacity / Discharge = 100 lpm					
	outlet Head = 100 mwc	1	Sets.			
d	<b>Rain Water Transfer Pump (For Rain Water Harvesting Tank)</b>					
	1 Set = 2 Nos. Pump (1 Working + 1					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Standby)					
	TYPE OF PUMP = <del>Centrifugal</del> / or Submersible pump					
	Pump Capacity / Discharge = 100 lpm					
	outlet Head = 100 mwc	1	Sets.			
2	<b>Sump Pump ( For BASEMENT STORM DRAINAGE SYSTEM / BASEMENT TOILET SEWAGE DRAINAGE SYSTEM )</b>					
	<b>PUMPS:</b> Providing, installation, testing and commissioning of dewatering sewage sump pump with motor etc complete and as directed with necessary accessories and equipment (valves etc ) including the pump panel as required. complete with all accessories, suction/discharge butterfly or gate valves, suction strainers, discharge non-return valves, pressure gauges, etc. complete and as directed.					
	<b>PANELS:</b> Providing, installation, testing and commissioning of sheet steel clad wall mounting control panel having suitably rated incoming isolating switch incoming voltmeter with selector switch and fuses. DOL starter with hand reset overload cum single-phase preventor type relay, ammeter to read current in any one phase. OFF/AUTO/MANUAL selector switch, pump changeover facility, dry run presenter switch and NHT Italian make and equivalent level switch for automatic control of pump and electronic toggle relay for automatic alternating of pumps.					
	Providing, installation, testing and commissioning of PVC armoured/ sheathed/insulated copper cables of the required ratings (as approved) with terminations, installation, accessories, cable trays, saddles, clamps, complete in all respects to all Plumbing Equipment from the above Power Panel located in the Pump room. Cost shall be inclusive of Supporting angle for Submersible pump.					
a	<b>Sump Pump ( For Car pit Drainage + 4 Plumbing Duct drainage)</b>					
	(1 working + 1standby)					
	Pump Capacity / Discharge =50 lpm					
	outlet Head = 30 mwc	11	Sets.			
b	<b>Sump Pump ( For Storm Water Drainage )</b>					
	(1 working + 1standby)					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Pump Capacity / Discharge =50 lpm outlet Head = 20 mwc	2	Sets.			
c	<b>Sump Pump ( For Toilet Sewage Drainage ) Ground Floor &amp; Basement 1</b> (1 working + 1standby) Pump Capacity / Discharge =15 lpm outlet Head = 12 mwc	3	Sets.			
	(NOTE: Incoming cable to the panel will be in the scope of the Electrical Contractor, but the termination of it in the panel will be in the scope of the Plumbing Contractor)					
	<b>SUB-TOTAL ( PUMPS AND EQUIPMENT)</b>					
I	<b>Sewage Treatment Plant (STP)</b> Supply, Installation, Testing and Commissioning of Sewage Treatment Plant (STP) and complete as directed with all accessories.					
a	<b>100 KLD</b>	1	Sets.			
J	<b>Organic Waste Composer</b> Supply, Installation, Testing and Commissioning of Organic Waste Composer (OWC) and complete as directed with all accessories.					
a	<b>500 KG</b>	1	Sets.			
K	<b>Approval of Plumbing System From Local Authority</b> Liasoning work with Approval of Plumbing system from local authority and any other relevant statutory authority at initial & various other stages of works, including preparation of report / drawings as per fire authority. Contractor shall include cost of all liaison works which are not explicitly mentioned above but are mandatory to have local authority approval (any statutory charges will be paid extra)	1	Lumpsu m			
	<b>Official / Statutory charges</b>					
b	Any Official / statutory charges will be paid extra (Scope of M/s. Client)	1	Lumpsu m			
	<b>SUB - TOTAL (APPROVAL OF PLUMBING SYSTEM FROM LOCAL AUTHORITY)</b>					
A	<b>INTERNAL WATER SUPPLY SYSTEM:</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
1	<b>Work within Toilet/Pantry/Kitchen area Concealed piping (Water Supply Domestic)</b>					
	<b>CPVC Pipe (Chlorinated Polyvinyl Chloride)</b>					
	<b>SDR 11:</b> Pipes to be used from 1/2 Inch to 2 Inch (7 Bar @ 82 Deg C and 28 Bar @ 23 Deg C)					
	<b>Schedule 80:</b> Pipe to be used from 2-1/2 Inch to 6 Inch.					
	Providing and fixing CPVC (Chlorinated Poly Vinyl Chloride) water supply pipes . Pipes shall be joined using solvent welded CPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between CPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only CPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Cost shall be inclusive of insulation for hot water pipe. and also Cost shall be inclusive of pipe length whether Geyser installed in Shower area or in plumbing shaft.					
	Cost shall be inclusive of Making maximum of 7.5 x 7.5 cm chase in wall and floors for the pipe, making good the same by using 1:2 cement mortar over the wire mesh and providing protection to embedded pipes and fittings (in wall chase) by wrapping two layers of 400 micron polythene sheet including proper overlaps on joints complete as required.					
a	25 mm dia	260	Rmt			
b	20 mm dia	1255	Rmt			
c	15 mm dia	790	Rmt			
2	<b>Work within Toilet/Pantry/Kitchen area Concealed piping (Water Supply Flushing)</b>					
	<b>CPVC Pipe (Chlorinated Polyvinyl Chloride)</b>					
	<b>SDR 11:</b> Pipes to be used from 1/2 Inch to 2 Inch (7 Bar @ 82 Deg C and 28 Bar @ 23 Deg C)					
	<b>Schedule 80:</b> Pipe to be used from 2-1/2 Inch to 6 Inch.					
	Providing and fixing CPVC (Chlorinated Poly Vinyl Chloride) water supply pipes . Pipes shall be joined using solvent welded					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	CPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between CPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only CPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Cost shall be inclusive of insulation for hot water pipe. and also Cost shall be inclusive of pipe length whether Geyser installed in Shower area or in plumbing shaft.					
	Cost shall be inclusive of Making maximum of 7.5 x 7.5 cm chase in wall and floors for the pipe, making good the same by using 1:2 cement mortar over the wire mesh and providing protection to embedded pipes and fittings (in wall chase) by wrapping two layers of 400 micron polythene sheet including proper overlaps on joints complete as required.					
a	40 mm dia	1010	Rmt			
b	32 mm dia	750	Rmt			
3	<b>Work within Plumbng Duct (Water Supply Domestic )</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV,with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	50 mm dia	48	Rmt			
b	40 mm dia	96	Rmt			
c	32 mm dia	102	Rmt			
d	25 mm dia	376	Rmt			
4	<b>Work within Plumbng Duct (Water Supply Flushing)</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV,with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	65 mm dia	96	Rmt			
b	50 mm dia	96	Rmt			
c	40 mm dia	378	Rmt			
d	32 mm dia	3	Rmt			
5	<b>Work within Terrace Loop (Water Supply Domestic )</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV, with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	80 mm dia	125	Rmt			
6	<b>Work within Terrace Loop (Water Supply Flushing)</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers,					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV, with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	80 mm dia	125	Rmt			
7	<b>VALVES in Terrace &amp; Plumbing Duct (For Domestic and Flushing)</b>					
7.1	<b>Ball Valve</b>					
	Providing and fixing ball valve including flanges / union, etc. complete as required.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Brass					
a	20 mm n.b	4	NOS.			
b	25 mm n.b	45	NOS.			
c	32 mm n.b	4	NOS.			
d	40 mm n.b	45	NOS.			
e	50 mm n.b	4	NOS.			
7.2	<b>Butterfly Valve (Terrace Floor)</b>					
	Providing & fixing butterfly valve (Body : Grey Cast Iron, Shaft : SS, Disc : SG Iron (Rilson coated), Liner : HT - EPDM) (upto 150mm dia with hand lever operation & above with gear box operation). Including					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	rubber gasket, flanges, nuts, bolts, washers & painting complete as required. Tested pressure = 15 Kg / Sqcm Material : Cast Iron					
a	65 mm n.b	4	NOS.			
7.3	<b>Air Vent valve (Terrace Floor PIPE LOOP)</b> Providing & fixing Auto Air vent for cold water supply risers. Tested pressure = 15 Kg / Sqcm Material : Cast Iron					
a	15 mm n.b	8	NOS.			
7.4	<b>P.R.V.</b> Providing and fixing Pressure Reducing valves complete as directed by engineer-in-charge. Contractor to set pressure as per instructions from consultant during execution. <b>Note: Set of P.R.V. of including 5 nos. x Ball / Butterfly Valve + 2 nos. x P.R.V.</b> Tested pressure = 25 Kg / Sqcm Material : Forged Brass / Bronze					
a	40 mm n.b	5	NOS.			
b	50 mm n.b	3	NOS.			
c	65 mm n.b	6	NOS.			
	<b>SUB-TOTAL (Internal Water Supply System)</b>					
<b>B</b>	<b>INTERNAL SEWAGE DRAINAGE SYSTEM:</b>					
	<b>Work with in TOILET / Kitchen</b>					
1	<b>UPVC Floor traps (plain / multi)</b> Supply, Installation, Testing and Commissioning of upvc Floor traps (plain / multi) of self cleansing design with water seal not less than 25mm with or without vent, including setting the trap in cement concrete M-15 as per specifications etc. complete. Rate to include making of opening in floor, marble / tiles, for fixing					
1.1	<b>Floor traps (for Toilet / Kitchen)</b>					
a	Trap with 110mm inlet & 75mm outlet.	150	NOS.			
1.2	<b>Multifloor traps (for Toilet / Kitchen)</b>					
a	Trap with 110mm inlet & 75mm outlet.	200	NOS.			
2	<b>SWR PVC pipes (Type-B) (For Pipes in</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>Toilets /Kitchen Area)</b>					
	Supply, Installation, Testing and Commissioning of UPVC- SWR pipes confirming to IS : 13592, and confirming to IS : 4985 (Pipe Class III - 6 kg / sq.cm)					
	and all necessary fittings such as 45 or 90 deg. bends, Tee's, Y's, including solvent cement jointing and testing with setting the pipes in cement concrete <b>M-15</b> as per specifications					
a	50 dia (Type B)	750	Rmt			
b	75 dia (Type B)	1000	Rmt			
c	100 dia (Type B)	750	Rmt			
	<b>Work with in plumbing duct</b>					
3	<b>SWR PVC pipes (Typ-B) (For Pipes in Shafts, Soil, Waste, Vent, etc.)</b>					
	Supply Installation Testing and Commissioning					
	SWR- UPVC pipes and all necessary fittings such as 45 or 90 deg. bends, Tee's, Y's, Cowl's including fixing of pipe support with PVC coated GI clamps on GI brackets and ring jointing with testing of pipes and making the joints leak proof and as directed by Engineer in charge etc, complete					
a	75 dia (Type B)	336	Rmt			
b	100 dia (Type B)	336	Rmt			
c	150 dia (Type B)	336	Rmt			
	<b>Work for Diverted Pipe</b>					
4	<b>Work within Basement Toilets &amp; Ground Toilet to STP (BY PUMP)</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV,with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
c	65 mm dia	110	Rmt			
5	<b>C.I. pipes</b>					
	Supply Installation Testing and Commissioning					
	"LA" class C.I. tested heavy pipe including fitting					
	indoor with heavy clamps and M S hot dip galvanized brackets					
	or in MS trenche on clamp.					
	<b>Work within Ground ceiling shaft to STP &amp; Work within STP to Municipal line (in case of STP nor worked)</b>					
a	160 dia	110	Rmt			
	<b>SUB-TOTAL (Internal Sewage Drainage System)</b>					
<b>C</b>	<b>INTERNAL STORM DRAINAGE SYSTEM:</b>					
1	<b>UPVC Floor traps</b>					
	Supply, Installation, Testing and Commissioning					
	of upvc Floor traps of self cleansing design					
	with water seal not less than 25mm					
	with or without vent, including setting the trap					
	in cement concrete <b>M-15</b> as per					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	specifications etc. complete.					
	Rate to include making of opening in floor, marble / tiles, for fixing					
1.1	<b>Floor Drain (for service area drainage)</b>					
a	Trap with 110mm inlet & 75mm outlet.	22	NOS.			
1.2	<b>Floor Drain (for service area drainage)</b>					
a	Trap with 110mm inlet & 75mm outlet.	40	NOS.			
2	<b>Rain water `Khurras (at Terrace )</b>					
	Supply, Installation, Testing and Commissioning of rain water `Khurras' required depth with lead flashing around the pipe with one piece lead sheet of 3 mm thick set on a layer of cold bitumen.	16	NOS.			
3	<b>PVC Heavy grating (at Terrace )</b>					
	Supply, Installation, Testing and Commissioning of					
	Heavy grating at the collection point of rain water pipe on terrace with material and labour etc. complete as per directions of engineer-in-charge.					
a	100 mm for 75 dia Pipe	62	NOS.			
b	230 mm for 150 dia Pipe	16	NOS.			
4	<b>SWR PVC pipes (Typ-B) (Work with in Service area drainage)</b>					
	Supply, Installation, Testing and Commissioning of					
	SWR-UPVC pipes and all necessary fittings such					
	as 45 or 90 deg. bends, Tee's, Y's, access pipe including fixing pipe					
	support with PVC coated GI clamps on GI brackets and					
	ring / solvent jointing with testing of pipes and making the					
	joints leak proof and as directed by Engineer in charge					
	etc complete.					
a	75 dia	33	Rmt			
5	<b>SWR PVC pipes (Typ-B) (Work with in plumbing duct)</b>					
	Supply, Installation, Testing and Commissioning of					
	SWR-UPVC pipes and all necessary fittings such					
	as 45 or 90 deg. bends, Tee's, Y's, access pipe including fixing pipe					
	support with PVC coated GI clamps on GI brackets and					
	ring / solvent jointing with testing of pipes					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	and making the joints leak proof and as directed by Engineer in charge etc complete.					
a	150 dia	1392	Rmt			
6	<b>SWR PVC pipes (Typ-B) (Work with in Basement Floor drainage)</b> Supply, Installation, Testing and Commissioning of SWR-UPVC pipes and all necessary fittings such as 45 or 90 deg. bends, Tee's, Y's, access pipe including fixing pipe support with PVC coated GI clamps on GI brackets and ring / solvent jointing with testing of pipes and making the joints leak proof and as directed by Engineer in charge etc complete.					
a	75 dia	260	Rmt			
	<b>Work for Diverted Pipe</b>					
7	<b>C.I. pipes (Work within Basement Ceiling To Ground Chamber)</b> Supply Installation Testing and Commissioning "LA" class C.I. tested heavy pipe including fitting indoor with heavy clamps and M S hot dip galvanized brackets or in MS trenche on clamp.					
a	210 dia	300	Rmt			
8	<b>Work within 3rd Basement to ground for Car Pit, Sump &amp; Plumbing shaft drainage (BY PUMP)</b> <b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b> Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	pipes & fittings. Including ball valve, Butterfly valve, PRV,with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	50 mm dia	520	Rmt			
	<b>SUB-TOTAL (Internal Storm Drainage System)</b>					
<b>D</b>	<b>External Water Supply:</b>					
1	<b>G.I. pipe</b>					
1.1	<b>Work within Muncipal Main Line to UG Tank</b>					
	Providing and laying in trenches 80 mm dia. heavy grade having embossed as ISI Mark galvanised iron pipes of 10.15 kg/metre necessary fitting remaking good the demolished portion with filling trenches and with primer of anti-corrosive oil paint , 2 coats complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete.	90	Rmt			
1.2	<b>Work within UG Tank to OH Tank (Domestic &amp; Flushing)</b>					
	Providing and laying in trenches 50 mm dia. heavy grade having embossed as ISI Mark galvanised iron pipes of 6.33 kg/metre necessary fitting remaking good the demolished portion with filling trenches and with primer of anti-corrosive oil paint , 2 coats complete. Including removing existing pipe line if necessary and conveying and stacking the same in					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	PWD chowky or as directed etc. complete.					
a	2nd Basement	100	Rmt			
b	1st Basement	12	Rmt			
c	Ground Floor	12	Rmt			
d	1st Floor (1% charges)	12	Rmt			
e	2nd Floor (2% charges)	12	Rmt			
f	3rd Floor (3% charges)	12	Rmt			
g	4th Floor (4% charges)	12	Rmt			
h	5th Floor (5% charges)	12	Rmt			
i	6th Floor (6% charges)	12	Rmt			
j	7th Floor (6.5% charges)	12	Rmt			
k	8th Floor (7% charges)	12	Rmt			
l	9th Floor (7.5% charges)	12	Rmt			
m	10th Floor (8% charges)	12	Rmt			
n	11th Floor (8.5% charges)	12	Rmt			
o	12th Floor (9% charges)	12	Rmt			
p	Terrace Floor (9.5%Charges)	40	Rmt			
2	<b>Water Meter</b>					
a	Providing and fixing 80mm diameter water meter with non-return valve including strainer, sockets/ union nut and including water meter box making locking arrangement and lock. [Without chamber].	1	NOS.			
3	<b>Water Meter chamber</b>					
a	Brick masonry chamber with 230 thick walls in C.M. 1:5, resting on 150 thick C.C. M 15 bed, 12 thick cement plaster inside and outside in C.M. 1:3. Cost shall be inclusive of excavation in all kind of soil, dewatering, backfilling, ramming & removing the surplus excavated material and making good the same complete as required and satisfaction of the Project Manager.	1	NOS.			
4	<b>Frame and cover for Water Meter chamber</b>					
	Frame and cover with locking arrangement etc. complete as specified.					
c	C.I. Frame and cover size 900mm x 450mm ( Heavy duty)	1	NOS.			
	<b>SUB - TOTAL EXTERNAL WATER SUPPLY</b>					
E	<b>EXTERNAL SEWAGE DRAINAGE SYSTEM:</b>					
1	<b>SWR uPVC Foam Core Pipes</b>					
	<b>Work within Basement RCC Pardi to Municipal Line</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Providing , laying and fixing ,jointing Supreme Eco- drain 200 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees tees, coupler etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete.	20	Rm.			
2	<b>SW gully trap</b>					
	Providing and fixing stoneware <b>Ceiling suspended gully trap</b> at ceiling level. Making necessary connections & providing water tight C.I./D.I. cover with frame of suitable size.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	450 x 450mm chamber with 150 x 100mm size 'P' trap	4	Nos.			
3	<b>IC Chamber / Inspection Chamber</b>					
	Providing and constructing Brick Masonry inspection Chamber 90cm x 45cm including 1:4:8 C.C foundation, 1:2:4 C.C.channels/half round glazed stoneware pipe channel, salt glazed stone-ware intercepting trap with rodding pipe set in 1:4:8 cement concrete block, brick masonry plastering inside and Outside, with C.I. lead cover of 75 kg with frame fixed in cement concrete.	3	Nos.			
	Contractor shall submit the structural design and drawings for the approval of Project Manager prior to execution.					
4	<b>Sewer Trap</b>					
	Providing, laying, testing and commissioning of Sewer Trap in CC 1:2:4					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	as diverted and as specified.					
a	Sewer Trap (150 x 230mm )	1	Nos.			
	<b>SUB-TOTAL (EXTERNAL SEWAGE DRAINAGE SYSTEM)</b>					
<b>F</b>	<b>EXTERNAL STORM DRAINAGE SYSTEM:</b>					
<b>1</b>	<b>SWR uPVC Foam Core Pipes</b>					
1.1	<b>Work within Ground Floor all round drainage</b>					
	Providing , laying and fixing ,jointing Supreme Eco- drain 160 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees , coupler, etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete.	250	Rm.			
1.2	<b>Work within Basement RCC Pardi to Harvesting Tank</b>					
	Providing , laying and fixing ,jointing Supreme Eco- drain 200 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees tees, coupler etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete.	100	Rm.			
<b>2</b>	<b>Rain Water Chamber</b>					
	Designing and constructing brick masonry inspection chamber of the following sizes in brick work of class 75 in cement mortar 1:5 (1 cement:5 fine sand), R.C.C. at top level with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm. nominal size) embeded with frame for manhole, RCC foundation slab. 1:2:4 mix (1 cement : 2 coarse sand:4 graded stone aggregate 40 mm nominal size) both inside and outside of plastering 12 mm thick with cement motar 1:3 (1 cement : 3 coarse sand) with a floating coat of neat cement on inside face, proper water proofing to ensure no ground water seepage in the manhole, Poly propylene (conforming to ASTM D - 4101) foot rests (meeting the 224 kg load requirement as per IS 5455) at 300 mm spacing, benching and making channels					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	with 1:2:4 cement concrete neatly finished, including necessary centering and shuttering, reinforcement, excavation, in all kind of soil, dewatering, refilling, watering, ramming and removing the surplus excavated earth, making good the same complete as required.					
	Contractor shall submit the structural design and drawings for the approval of Project Manager prior to execution.					
a	450 x 900 x upto a depth of 1.2 m	10	Nos.			
b	600 x 600 x upto a depth of 1.2 m	18	Nos.			
3	<b>Frame and cover for Rain Water Chamber</b>					
	Frame and cover with locking arrangement etc. complete as specified.					
	<del>RCC / SFRC / FRP / MS / CI / DI</del>					
a	450 x 900 mm, Medium Duty	12	NOS.			
b	600 x 600 mm, Medium Duty	18	NOS.			
4	<b>STORM DRAINAGE CHANNEL</b>					
	Providing & constructing stormwater CHANNEL of 230 mm thick brick masonry work in 1:5 cement mortar, plastering smooth inside & rough outside in 1:3 cement sand mortar, 150 mm thick PCC bed in 1:3:6 PCC, including excavations, dewatering, shoring and strutting, backfilling & 230 mm wide PCC curb in 1:2:4 PCC at top of channel for fixing the Heavy Duty MS / RCC grating etc. complete.					
a	600mm WIDE upto maximum depth of 1.2 m.	150	Rmt			
5	<b>CHANNEL Grating</b>					
	CHANNEL Grating complete as specified.					
	<del>RCC / SFRC / GRP / MS / CI / DI</del>					
a	600mm WIDE mm (Heavy Duty / Medium Duty/ <del>Light Duty</del> )	150	Rmt			
	<b>SUB-TOTAL (EXTERNAL STORM DRAINAGE SYSTEM)</b>					
G	<b>TANKS</b>					
	<b>U.G. TANK</b>					
1	<b>G.I. Puddle flanges</b>					
	Supplying & fixing in position galvanised iron puddle flanges of approx. 60 cm length with flange on one end and welded to mild steel plate (8mm thick) in the					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	centre etc. complete as directed by engineer-in-charge					
a	150 mm dia	10	Nos.			
b	100 mm dia	10	Nos.			
c	80 mm dia	10	Nos.			
d	65 mm dia	10	Nos.			
e	50 mm dia	10	Nos.			
f	25 mm dia	10	Nos.			
2	<b>Manhole Covers (for domestic, Flushing &amp; Fire Tank)</b>					
	Providing and fixing Circular type Manhole Covers with frame of approved make of 525 mm dia including all necessary supports, grouting of the frame in RCC, etc. complete as directed by engineer-in-charge.					
	<b>RCC / SFRC / FRP / MS / CI / DI</b>					
a	600 mm, Medium Duty	6	NOS.			
3	<b>Vapour vent pipes (for Domestic &amp; Flushing Tank)</b>					
	Supply & installation of vapour vent pipes with Tee, Elbow, Pvc Mosquito proof jali including required jointing material etc. complete.					
	<b>(1 set = 2" pipe + 1 Tee + 2 Elbow + 2 mosquito jali)</b>					
a	50 mm n.b.	6	Rmt			
4	<b>Overflow and Drain pipes ("C" class G.I. pipe) (for Domestic &amp; Flushing Tank)</b>					
	Supply & installation of overflow and drain pipes of 50mm with Elbow, Plug, Pvc Mosquito proof jali including required jointing material etc. complete.					
	for under ground and over head water tanks					
a	80 mm n.b	50	Rmt			
5	<b>Float Valve (for Domestic &amp; Flushing Tank)</b>					
	Providing and fixing in position of approved quality high pressure rated Gun Metal Float Valve with copper ball float and brass rods of required length of the following sizes:					
	Tested pressure = 15 Kg / Sqcm					
	Material : Gun Metal					
c	80 mm n.b	2	NOS.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>O.H. TANK</b>					
6	<b>G.I. Puddle flanges</b>					
	Supplying & fixing in position galvanised iron puddle flanges of approx. 60 cm length with flange on one end and welded to mild steel plate (8mm thick) in the centre etc. complete as directed by engineer-in-charge					
a	150 mm dia	10	Nos.			
b	100 mm dia	10	Nos.			
c	80 mm dia	10	Nos.			
d	65 mm dia	10	Nos.			
e	50 mm dia	10	Nos.			
f	25 mm dia	10	Nos.			
7	<b>Manhole Covers (for domestic, Flushing &amp; Fire Tank)</b>					
	Providing and fixing Circular type Manhole Covers with frame of approved make of 525 mm dia including all necessary supports, grouting of the frame in RCC, etc. complete as directed by engineer-in-charge.					
	<b>RCC /SFRC / FRP / MS / CI / DI</b>					
b	600 mm, Medium Duty	6	NOS.			
8	<b>Vapour vent pipes (for Domestic, Flushing &amp; Fire Tank)</b>					
	Supply & installation of vapour vent pipes with Tee, Elbow, Pvc Mosquito proof jali including required jointing material etc. complete.					
	<b>(1 set = 2" pipe + 1 Tee + 2 Elbow + 2 mosquito jali)</b>					
a	50 mm n.b.	6	Rmt			
9	<b>Overflow and Drain pipes ("C" class G.I. pipe ) (for Domestic &amp; Flushing Tank)</b>					
	Supply & installation of overflow and drain pipes of 50mm with Elbow, Plug, Pvc Mosquito proof jali including required jointing material etc. complete.					
	for under ground and over head water tanks					
a	80 mm n.b	20	Rmt			
10	<b>Butterfly Valve (OH Tank outlet &amp; Drain)</b>					
	Providing & fixing butterfly valve (Body : Grey Cast Iron, Shaft : SS, Disc : SG Iron (Rilson coated), Liner : HT - EPDM) (upto					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	150mm dia with hand lever operation & above with gear box operation). Including rubber gasket, flanges, nuts, bolts, washers & painting complete as required.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Cast Iron					
a	65 mm n.b	2	NOS.			
b	80 mm n.b	2	NOS.			
11	<b>Y-Strainer (For OH Tank outlet)</b>					
	Providing & fixing Y-Strainer complete as required.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Cast Iron					
a	65 mm n.b	1	NOS.			
b	80 mm n.b	1	NOS.			
c	100 mm n.b		NOS.			
12	<b>G. M. S. Ladder (From Terrace to O.H. Tank)</b>					
	Providing and laying factory fabricated G. M. S. Ladder with 3 coats of zinc rich epoxy paint over a coat primer etc complete as directed.					
a	4 m long x 450 mm wide	2	Nos.			
	<b>SUB - TOTAL (TANKS)</b>					
<b>H</b>	<b>PUMPS AND EQUIPMENT</b>					
1	<b>Water Transfer Pump for Single O.H. Tank</b>					
	<b>PUMPS:</b> Providing, installation, testing and commissioning of totally Stainless Steel pumps having 304 SS casing, Bronze impellers, SS shaft and driven by suitable HP , 415 Volts, 50 cycles, AC 3 phase motor. Each pump should be capable of delivering as req demand, complete with all accessories, suction/discharge butterfly or gate valves, suction strainers, discharge non-return valves, pressure gauges, etc. complete and as directed.					
	<b>PANELS:</b> Providing, installation, testing and commissioning of sheet steel clad wall mounting control panel having suitably rated incoming isolating switch incoming voltmeter with selector switch and fuses. DOL starter with hand reset overload cum single-phase preventor type relay, ammeter to read current in any one phase. OFF/AUTO/MANUAL selector switch, pump changeover facility, dry run					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	presenter switch and NHT Italian make and equivalent level switch for automatic control of pump and electronic toggle relay for automatic alternating of pumps.					
	Providing, installation, testing and commissioning of PVC armoured/ sheathed/insulated copper cables of the required ratings (as approved) with terminations, installation, accessories, cable trays, saddles, clamps, complete in all respects to all Plumbing Equipment from the above Power Panel located in the Pump room. Cost shall be inclusive of Supporting angle for Submersible pump.					
a	<b>Domestic Water Transfer Pump</b>					
	1 Set = 2 Nos. Pump (1 Working + 1 Standby)					
	TYPE OF PUMP = <del>Centrifugal</del> / or Submersible pump					
	Pump Capacity / Discharge = 170 lpm					
	outlet Head = 100 mwc	1	Sets.			
b	<b>Flushing Water Transfer Pump</b>					
	1 Set = 2 Nos. Pump (1 Working + 1 Standby)					
	TYPE OF PUMP = <del>Centrifugal</del> / or Submersible pump					
	Pump Capacity / Discharge = 250 lpm					
	outlet Head = 100 mwc	1	Sets.			
c	<b>STP Treated Water Transfer Pump</b>					
	1 Set = 2 Nos. Pump (1 Working + 1 Standby)					
	TYPE OF PUMP = <del>Centrifugal</del> / or Submersible pump					
	Pump Capacity / Discharge = 100 lpm					
	outlet Head = 100 mwc	1	Sets.			
d	<b>Rain Water Transfer Pump (For Rain Water Harvesting Tank)</b>					
	1 Set = 2 Nos. Pump (1 Working + 1 Standby)					
	TYPE OF PUMP = <del>Centrifugal</del> / or Submersible pump					
	Pump Capacity / Discharge = 100 lpm					
	outlet Head = 100 mwc	1	Sets.			
2	<b>Sump Pump ( For BASEMENT STORM DRAINAGE SYSTEM / BASEMENT TOILET SEWAGE DRAINAGE SYSTEM )</b>					
	<b>PUMPS:</b> Providing, installation, testing					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	and commissioning of dewatering sewage sump pump with motor etc complete and as directed with necessary accessories and equipment (valves etc ) including the pump panel as required. complete with all accessories, suction/discharge butterfly or gate valves, suction strainers, discharge non-return valves, pressure gauges, etc. complete and as directed.					
	<b>PANELS:</b> Providing, installation, testing and commissioning of sheet steel clad wall mounting control panel having suitably rated incoming isolating switch incoming voltmeter with selector switch and fuses. DOL starter with hand reset overload cum single-phase preventor type relay, ammeter to read current in any one phase. OFF/AUTO/MANUAL selector switch, pump changeover facility, dry run presenter switch and NHT Italian make and equivalent level switch for automatic control of pump and electronic toggle relay for automatic alternating of pumps.					
	Providing, installation, testing and commissioning of PVC armoured/ sheathed/insulated copper cables of the required ratings (as approved) with terminations, installation, accessories, cable trays, saddles, clamps, complete in all respects to all Plumbing Equipment from the above Power Panel located in the Pump room. Cost shall be inclusive of Supporting angle for Submersible pump.					
a	<b>Sump Pump ( For Car pit Drainage + 4 Plumbing Duct drainage)</b> (1 working + 1standby) Pump Capacity / Discharge =50 lpm outlet Head = 30 mwc	11	Sets.			
b	<b>Sump Pump ( For Storm Water Drainage )</b> (1 working + 1standby) Pump Capacity / Discharge =50 lpm outlet Head = 20 mwc	2	Sets.			
c	<b>Sump Pump ( For Toilet Sewage Drainage ) Ground Floor &amp; Basement 1</b> (1 working + 1standby) Pump Capacity / Discharge =15 lpm outlet Head = 12 mwc	3	Sets.			
	(NOTE: Incoming cable to the panel will be					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	in the scope of the Electrical Contractor, but the termination of it in the panel will be in the scope of the Plumbing Contractor)					
	<b>SUB-TOTAL ( PUMPS AND EQUIPMENT)</b>					
<b>I</b>	<b>Sewage Treatment Plant (STP)</b>					
	Supply, Installation, Testing and Commissioning of Sewage Treatment Plant (STP) and complete as directed with all accessories.					
a	<b>100 KLD</b>	1	Sets.			
<b>J</b>	<b>Organic Waste Composer</b>					
	Supply, Installation, Testing and Commissioning of Organic Waste Composer (OWC) and complete as directed with all accessories.					
a	<b>500 KG</b>	1	Sets.			
<b>K</b>	<b>Approval of Plumbing System From Local Authority</b>					
a	Liasoning work with Approval of Plumbing system from local authority and any other relevant statutory authority at initial & various other stages of works, including preparation of report / drawings as per fire authority. Contractor shall include cost of all liaison works which are not explicitly mentioned above but are mandatory to have local authority approval (any statutory charges will be paid extra)	1	Lumpsu m			
	<b>Official / Statutory charges</b>					
b	Any Official / statutory charges will be paid extra (Scope of M/s. Client)	1	Lumpsu m			
	<b>SUB - TOTAL (APPROVAL OF PLUMBING SYSTEM FROM LOCAL AUTHORITY)</b>					
<b>A</b>	<b>INTERNAL WATER SUPPLY SYSTEM:</b>					
1	<b>Work within Toilet/Pantry/Kitchen area Concealed piping (Water Supply Domestic)</b>					
	<b>CPVC Pipe (Chlorinated Polyvinyl Chloride)</b>					
	<b>SDR 11:</b> Pipes to be used from 1/2 Inch to 2 Inch (7 Bar @ 82 Deg C and 28 Bar @ 23 Deg C)					
	<b>Schedule 80:</b> Pipe to be used from 2-1/2 Inch to 6 Inch.					
	Providing and fixing CPVC (Chlorinated					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Poly Vinyl Chloride) water supply pipes . Pipes shall be joined using solvent welded CPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between CPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only CPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Cost shall be inclusive of insulation for hot water pipe. and also Cost shall be inclusive of pipe length whether Geyser installed in Shower area or in plumbing shaft.					
	Cost shall be inclusive of Making maximum of 7.5 x 7.5 cm chase in wall and floors for the pipe, making good the same by using 1:2 cement mortar over the wire mesh and providing protection to embedded pipes and fittings (in wall chase) by wrapping two layers of 400 micron polythene sheet including proper overlaps on joints complete as required.					
a	25 mm dia	260	Rmt			
b	20 mm dia	1255	Rmt			
c	15 mm dia	790	Rmt			
2	<b>Work within Toilet/Pantry/Kitchen area Concealed piping (Water Supply Flushing)</b>					
	<b>CPVC Pipe (Chlorinated Polyvinyl Chloride)</b>					
	<b>SDR 11:</b> Pipes to be used from 1/2 Inch to 2 Inch (7 Bar @ 82 Deg C and 28 Bar @ 23 Deg C)					
	<b>Schedule 80:</b> Pipe to be used from 2-1/2 Inch to 6 Inch.					
	Providing and fixing CPVC (Chlorinated Poly Vinyl Chloride) water supply pipes . Pipes shall be joined using solvent welded CPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between CPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only CPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	pipes & fittings. Cost shall be inclusive of insulation for hot water pipe. and also Cost shall be inclusive of pipe length whether Geyser installed in Shower area or in plumbing shaft.					
	Cost shall be inclusive of Making maximum of 7.5 x 7.5 cm chase in wall and floors for the pipe, making good the same by using 1:2 cement mortar over the wire mesh and providing protection to embedded pipes and fittings (in wall chase) by wrapping two layers of 400 micron polythene sheet including proper overlaps on joints complete as required.					
a	40 mm dia	1010	Rmt			
b	32 mm dia	750	Rmt			
3	<b>Work within Plumbng Duct (Water Supply Domestic )</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV,with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	manufacturer of pipes & fittings.					
a	50 mm dia	48	Rmt			
b	40 mm dia	96	Rmt			
c	32 mm dia	102	Rmt			
d	25 mm dia	376	Rmt			
4	<b>Work within Plumbng Duct (Water Supply Flushing)</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV,with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	65 mm dia	96	Rmt			
b	50 mm dia	96	Rmt			
c	40 mm dia	378	Rmt			
d	32 mm dia	3	Rmt			
5	<b>Work within Terrace Loop (Water Supply Domestic )</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV, with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	80 mm dia	125	Rmt			
6	<b>Work within Terrace Loop (Water Supply Flushing)</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	pipes & fittings. Including ball valve, Butterfly valve, PRV, with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	80 mm dia	125	Rmt			
7	<b>VALVES in Terrace &amp; Plumbing Duct (For Domestic and Flushing)</b>					
7.1	<b>Ball Valve</b>					
	Providing and fixing ball valve including flanges / union, etc. complete as required.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Brass					
a	20 mm n.b	4	NOS.			
b	25 mm n.b	45	NOS.			
c	32 mm n.b	4	NOS.			
d	40 mm n.b	45	NOS.			
e	50 mm n.b	4	NOS.			
7.2	<b>Butterfly Valve (Terrace Floor)</b>					
	Providing & fixing butterfly valve (Body : Grey Cast Iron, Shaft : SS, Disc : SG Iron (Rilson coated), Liner : HT - EPDM) (upto 150mm dia with hand lever operation & above with gear box operation). Including rubber gasket, flanges, nuts, bolts, washers & painting complete as required.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Cast Iron					
a	65 mm n.b	4	NOS.			
7.3	<b>Air Vent valve (Terrace Floor PIPE LOOP)</b>					
	Providing & fixing Auto Air vent for cold water supply risers.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Cast Iron					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
a	15 mm n.b	8	NOS.			
7.4	<b>P.R.V.</b>					
	Providing and fixing Pressure Reducing valves complete as directed by engineer-in-charge. Contractor to set pressure as per instructions from consultant during execution.					
	<b>Note: Set of P.R.V. of including 5 nos. x Ball / Butterfly Valve + 2 nos. x P.R.V.</b>					
	Tested pressure = 25 Kg / Sqcm					
	Material : Forged Brass / Bronze					
a	40 mm n.b	5	NOS.			
b	50 mm n.b	3	NOS.			
c	65 mm n.b	6	NOS.			
	<b>SUB-TOTAL (Internal Water Supply System)</b>					
<b>B</b>	<b>INTERNAL SEWAGE DRAINAGE SYSTEM:</b>					
	<b>Work with in TOILET / Kitchen</b>					
1	<b>UPVC Floor traps (plain / multi)</b>					
	Supply, Installation, Testing and Commissioning					
	of upvc Floor traps (plain / multi) of self cleansing design					
	with water seal not less than 25mm					
	with or without vent, including setting the trap					
	in cement concrete <b>M-15</b> as per specifications etc. complete.					
	Rate to include making of opening in floor, marble / tiles, for fixing					
1.1	<b>Floor traps (for Toilet / Kitchen)</b>					
a	Trap with 110mm inlet & 75mm outlet.	150	NOS.			
1.2	<b>Multifloor traps (for Toilet / Kitchen)</b>					
a	Trap with 110mm inlet & 75mm outlet.	200	NOS.			
2	<b>SWR PVC pipes (Type-B) (For Pipes in Toilets /Kitchen Area)</b>					
	Supply, Installation, Testing and Commissioning of UPVC- SWR pipes confirming					
	to IS : 13592, and confirming to IS : 4985 (Pipe Class III - 6 kg / sq.cm)					
	and all necessary fittings such as 45 or 90 deg. bends, Tee's, Y's, including					
	solvent cement jointing and testing with setting					
	the pipes in cement concrete <b>M-15</b> as per					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	specifications					
a	50 dia (Type B)	750	Rmt			
b	75 dia (Type B)	1000	Rmt			
c	100 dia (Type B)	750	Rmt			
	<b>Work with in plumbing duct</b>					
3	<b>SWR PVC pipes (Typ-B) (For Pipes In Shafts, Soil, Waste, Vent, etc.)</b>					
	Supply Installation Testing and Commissioning					
	SWR- UPVC pipes and all necessary fittings such					
	as 45 or 90 deg. bends, Tee's, Y's, Cows including fixing					
	of pipe support with PVC coated GI clamps on					
	GI brackets and ring jointing with testing of pipes and					
	making the joints leak proof and as directed by					
	Engineer in charge etc, complete					
a	75 dia (Type B)	336	Rmt			
b	100 dia (Type B)	336	Rmt			
c	150 dia (Type B)	336	Rmt			
	<b>Work for Diverted Pipe</b>					
4	<b>Work within Basement Toilets &amp; Ground Toilet to STP (BY PUMP)</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV, with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
c	65 mm dia	110	Rmt			
5	<b>C.I. pipes</b>					
	Supply Installation Testing and Commissioning					
	"LA" class C.I. tested heavy pipe including fitting					
	indoor with heavy clamps and M S hot dip galvanized brackets					
	or in MS trenche on clamp.					
	<b>Work within Ground ceiling shaft to STP &amp; Work within STP to Municipal line (in case of STP nor worked)</b>					
a	160 dia	110	Rmt			
	<b>SUB-TOTAL (Internal Sewage Drainage System)</b>					
<b>C</b>	<b>INTERNAL STORM DRAINAGE SYSTEM:</b>					
1	<b>UPVC Floor traps</b>					
	Supply, Installation, Testing and Commissioning					
	of upvc Floor traps of self cleansing design					
	with water seal not less than 25mm					
	with or without vent, including setting the trap					
	in cement concrete <b>M-15</b> as per specifications etc. complete.					
	Rate to include making of opening in floor, marble / tiles, for fixing					
1.1	<b>Floor Drain (for service area drainage)</b>					
a	Trap with 110mm inlet & 75mm outlet.	22	NOS.			
1.2	<b>Floor Drain (for service area drainage)</b>					
a	Trap with 110mm inlet & 75mm outlet.	40	NOS.			
2	<b>Rain water `Khurras (at Terrace)</b>					
	Supply, Installation, Testing and Commissioning of rain water `Khurras'	16	NOS.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	required depth with lead flashing around the pipe with one piece lead sheet of 3 mm thick set on a layer of cold bitumen.					
3	<b>PVC Heavy grating (at Terrace )</b> Supply, Installation, Testing and Commissioning of Heavy grating at the collection point of rain water pipe on terrace with material and labour etc. complete as per directions of engineer-in-charge.					
a	100 mm for 75 dia Pipe	62	NOS.			
b	230 mm for 150 dia Pipe	16	NOS.			
4	<b>SWR PVC pipes (Typ-B) (Work with in Service area drainage)</b> Supply, Installation, Testing and Commissioning of SWR-UPVC pipes and all necessary fittings such as 45 or 90 deg. bends, Tee's, Y's, access pipe including fixing pipe support with PVC coated GI clamps on GI brackets and ring / solvent jointing with testing of pipes and making the joints leak proof and as directed by Engineer in charge etc complete.					
a	75 dia	33	Rmt			
5	<b>SWR PVC pipes (Typ-B) (Work with in plumbing duct)</b> Supply, Installation, Testing and Commissioning of SWR-UPVC pipes and all necessary fittings such as 45 or 90 deg. bends, Tee's, Y's, access pipe including fixing pipe support with PVC coated GI clamps on GI brackets and ring / solvent jointing with testing of pipes and making the joints leak proof and as directed by Engineer in charge etc complete.					
a	150 dia	1392	Rmt			
6	<b>SWR PVC pipes (Typ-B) (Work with in Basement Floor drainage)</b> Supply, Installation, Testing and Commissioning of SWR-UPVC pipes and all necessary fittings					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	such					
	as 45 or 90 deg. bends, Tee's, Y's, access pipe including fixing pipe					
	support with PVC coated GI clamps on GI brackets and					
	ring / solvent jointing with testing of pipes and making the					
	joints leak proof and as directed by Engineer in charge					
	etc complete.					
a	75 dia	260	Rmt			
	<b>Work for Diverted Pipe</b>					
7	<b>C.I. pipes (Work within Basement Ceiling To Ground Chamber)</b>					
	Supply Installation Testing and Commissioning					
	"LA" class C.I. tested heavy pipe including fitting					
	indoor with heavy clamps and M S hot dip galvanized brackets					
	or in MS trench on clamp.					
a	210 dia	300	Rmt			
8	<b>Work within 3rd Basement to ground for Car Pit, Sump &amp; Plumbing shaft drainage (BY PUMP)</b>					
	<b>uPVC (unplasticized Polyvinyl Chloride) (SCHEDULE 40 / SCHEDULE 80)</b>					
	Pipes shall be joined using solvent welded UPVC fittings i.e. Tees, Elbows, Couplers, Unions, Reducers, brushings etc. including transition fittings (connection between UPVC & metal pipe/GI) i.e. Brass Adaptors (both Male & Female threaded) conforming to ASTM D-2846. ASTM F441 with only UPVC solvent cement conforming to ASTM F-493. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings. Including ball valve, Butterfly valve, PRV, with all fittings i.e. Tee, Elbow, flanges / union, rubber gasket, nuts, bolts, jointing material, washers & painting complete as required.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	50 mm dia	520	Rmt			
	<b>SUB-TOTAL (Internal Storm Drainage System)</b>					
<b>D</b>	<b>External Water Supply:</b>					
1	<b>G.I. pipe</b>					
1.1	<b>Work within Muncipal Main Line to UG Tank</b>					
	Providing and laying in trenches 80 mm dia. heavy grade having embossed as ISI Mark galvanised iron pipes of 10.15 kg/metre necessary fitting remaking good the demolished portion with filling trenches and with primer of anti-corrosive oil paint , 2 coats complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete.	90	Rmt			
1.2	<b>Work within UG Tank to OH Tank (Domestic &amp; Flushing)</b>					
	Providing and laying in trenches 50 mm dia. heavy grade having embossed as ISI Mark galvanised iron pipes of 6.33 kg/metre necessary fitting remaking good the demolished portion with filling trenches and with primer of anti-corrosive oil paint , 2 coats complete. Including removing existing pipe line if necessary and conveying and stacking the same in PWD chowky or as directed etc. complete.					
a	2nd Basement	100	Rmt			
b	1st Basement	12	Rmt			
c	Ground Floor	12	Rmt			
d	1st Floor (1% charges)	12	Rmt			
e	2nd Floor (2% charges)	12	Rmt			
f	3rd Floor (3% charges)	12	Rmt			
g	4th Floor (4% charges)	12	Rmt			
h	5th Floor (5% charges)	12	Rmt			
i	6th Floor (6% charges)	12	Rmt			
j	7th Floor (6.5% charges)	12	Rmt			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
k	8th Floor (7% charges)	12	Rmt			
l	9th Floor (7.5% charges)	12	Rmt			
m	10th Floor (8% charges)	12	Rmt			
n	11th Floor (8.5% charges)	12	Rmt			
o	12th Floor (9% charges)	12	Rmt			
p	Terrace Floor (9.5%Charges)	40	Rmt			
2	<b>Water Meter</b>					
a	Providing and fixing 80mm diameter water meter with non-return valve including strainer, sockets/ union nut and including water meter box making locking arrangement and lock. [Without chamber].	1	NOS.			
3	<b>Water Meter chamber</b>					
a	Brick masonry chamber with 230 thick walls in C.M. 1:5, resting on 150 thick C.C. M 15 bed, 12 thick cement plaster inside and outside in C.M. 1:3. Cost shall be inclusive of excavation in all kind of soil, dewatering, backfilling, ramming & removing the surplus excavated material and making good the same complete as required and satisfaction of the Project Manager.	1	NOS.			
4	<b>Frame and cover for Water Meter chamber</b>					
	Frame and cover with locking arrangement etc. complete as specified.					
c	C.I. Frame and cover size 900mm x 450mm ( Heavy duty)	1	NOS.			
	<b>SUB - TOTAL EXTERNAL WATER SUPPLY</b>					
<b>E</b>	<b>EXTERNAL SEWAGE DRAINAGE SYSTEM:</b>					
1	<b>SWR uPVC Foam Core Pipes</b>					
	<b>Work within Basement RCC Pardi to Municipal Line</b>					
	Providing , laying and fixing ,jointing Supreme Eco- drain 200 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees tees, coupler etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete.	20	Rm.			
2	<b>SW gully trap</b>					
	Providing and fixing stoneware <b>Ceiling</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	suspended gully trap at ceiling level. Making necessary connections & providing water tight C.I./D.I. cover with frame of suitable size.					
	Cost shall be inclusive of Fixing/supporting the pipes (& fittings) at wall/ceiling level supported by galvanized clamps, hangers etc, as per specification. Exposed pipes to be painted of legends with direction arrow. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealant compound at either end all as per Project Manager's / Consultant requirement. All termination points for installation of faucets shall have brass termination fittings. Installation shall be to as per Technical Manual of manufacturer of pipes & fittings.					
a	450 x 450mm chamber with 150 x 100mm size 'P' trap	4	Nos.			
3	<b>IC Chamber / Inspection Chamber</b>					
	Providing and constructing Brick Masonry inspection Chamber 90cm x 45cm including 1:4:8 C.C foundation, 1:2:4 C.C.channels/half round glazed stoneware pipe channel, salt glazed stone-ware intercepting trap with rodding pipe set in 1:4:8 cement concrete block, brick masonry plastering inside and Outside, with C.I. lead cover of 75 kg with frame fixed in cement concrete.	3	Nos.			
	Contractor shall submit the structural design and drawings for the approval of Project Manager prior to execution.					
4	<b>Sewer Trap</b>					
	Providing, laying, testing and commissioning of Sewer Trap in CC 1:2:4 as diverted and as specified.					
a	Sewer Trap (150 x 230mm )	1	Nos.			
	<b>SUB-TOTAL (EXTERNAL SEWAGE DRAINAGE SYSTEM)</b>					
F	<b>EXTERNAL STORM DRAINAGE SYSTEM:</b>					
1	<b>SWR uPVC Foam Core Pipes</b>					
1.1	<b>Work within Ground Floor all round drainage</b>					
	Providing , laying and fixing ,jointing	250	Rm.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Supreme Eco- drain 160 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees , coupler, etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete.					
1.2	<b>Work within Basement RCC Pardi to Harvesting Tank</b>					
	Providing , laying and fixing ,jointing Supreme Eco- drain 200 mm SN 4 Nu- Drain Upvc pipes or of equivalent make, manufacture as per EN 13476 or equivalent as per I.S.15328 with fittings such a bends, tees tees, coupler etc, jointing with rubber lubricant including necessary excavation, trench refilling with selective excavated materialetc. complete.	100	Rm.			
2	<b>Rain Water Chamber</b>					
	Designing and constructing brick masonry inspection chamber of the following sizes in brick work of class 75 in cement mortar 1:5 (1 cement:5 fine sand), R.C.C. at top level with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm. nominal size) embeded with frame for manhole, RCC foundation slab. 1:2:4 mix (1 cement : 2 coarse sand:4 graded stone aggregate 40 mm nominal size) both inside and outside of plastering 12 mm thick with cement motar 1:3 (1 cement : 3 coarse sand) with a floating coat of neat cement on inside face, proper water proofing to ensure no ground water seepage in the manhole, Poly propylene (conforming to ASTM D - 4101) foot rests (meeting the 224 kg load requirement as per IS 5455) at 300 mm spacing, benching and making channels with 1:2:4 cement concrete neatly finished, including necessary centering and shuttering, reinforcement, excavation, in all kind of soil, dewatering, refilling, watering, ramming and removing the surplus excavated earth, making good the same complete as required.					
	Contractor shall submit the structural design and drawings for the approval of Project Manager prior to execution.					
a	450 x 900 x upto a depth of 1.2 m	10	Nos.			
b	600 x 600 x upto a depth of 1.2 m	18	Nos.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
3	<b>Frame and cover for Rain Water Chamber</b>					
	Frame and cover with locking arrangement etc. complete as specified.					
	<del>RCC / SFRC / FRP / MS / CI / DI</del>					
a	450 x 900 mm, Medium Duty	12	NOS.			
b	600 x 600 mm, Medium Duty	18	NOS.			
4	<b>STORM DRAINAGE CHANNEL</b>					
	Providing & constructing stormwater CHANNEL of 230 mm thick brick masonry work in 1:5 cement mortar, plastering smooth inside & rough outside in 1:3 cement sand mortar, 150 mm thick PCC bed in 1:3:6 PCC, including excavations, dewatering, shoring and strutting, backfilling & 230 mm wide PCC curb in 1:2:4 PCC at top of channel for fixing the Heavy Duty MS / RCC grating etc. complete.					
a	600mm WIDE upto maximum depth of 1.2 m.	150	Rmt			
5	<b>CHANNEL Grating</b>					
	CHANNEL Grating complete as specified.					
	<del>RCC / SFRC / GRP / MS / CI / DI</del>					
a	600mm WIDE mm ( <del>Heavy Duty / Medium Duty / Light Duty</del> )	150	Rmt			
	<b>SUB-TOTAL (EXTERNAL STORM DRAINAGE SYSTEM)</b>					
<b>G</b>	<b>TANKS</b>					
	<b>U.G. TANK</b>					
1	<b>G.I. Puddle flanges</b>					
	Supplying & fixing in position galvanised iron puddle flanges of approx. 60 cm length with flange on one end and welded to mild steel plate (8mm thick) in the centre etc. complete as directed by engineer-in-charge					
a	150 mm dia	10	Nos.			
b	100 mm dia	10	Nos.			
c	80 mm dia	10	Nos.			
d	65 mm dia	10	Nos.			
e	50 mm dia	10	Nos.			
f	25 mm dia	10	Nos.			
2	<b>Manhole Covers (for domestic, Flushing &amp; Fire Tank)</b>					
	Providing and fixing Circular type					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Manhole Covers with frame of approved make of 525 mm dia including all necessary supports, grouting of the frame in RCC, etc. complete as directed by engineer-in-charge.					
	<del>RCC / SFRC / FRP / MS / CI / DI</del>					
a	600 mm, Medium Duty	6	NOS.			
3	<b>Vapour vent pipes (for Domestic &amp; Flushing Tank)</b>					
	Supply & installation of vapour vent pipes with Tee, Elbow, Pvc Mosquito proof jali including required jointing material etc. complete.					
	<b>(1 set = 2" pipe + 1 Tee + 2 Elbow + 2 mosquito jali)</b>					
a	50 mm n.b.	6	Rmt			
4	<b>Overflow and Drain pipes ("C" class G.I. pipe) (for Domestic &amp; Flushing Tank)</b>					
	Supply & installation of overflow and drain pipes of 50mm with Elbow, Plug, Pvc Mosquito proof jali including required jointing material etc. complete.					
	for under ground and over head water tanks					
a	80 mm n.b	20	Rmt			
10	<b>Butterfly Valve (OH Tank outlet &amp; Drain)</b>					
	Providing & fixing butterfly valve (Body : Grey Cast Iron, Shaft : SS, Disc : SG Iron (Rilson coated), Liner : HT - EPDM) (upto 150mm dia with hand lever operation & above with gear box operation). Including rubber gasket, flanges, nuts, bolts, washers & painting complete as required.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Cast Iron					
a	65 mm n.b	2	NOS.			
b	80 mm n.b	2	NOS.			
11	<b>Y-Strainer (For OH Tank outlet)</b>					
	Providing & fixing Y-Strainer complete as required.					
	Tested pressure = 15 Kg / Sqcm					
	Material : Cast Iron					
a	65 mm n.b	1	NOS.			
b	80 mm n.b	1	NOS.			
c	100 mm n.b		NOS.			
12	<b>G. M. S. Ladder (From Terrace to O.H. Tank)</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Providing and laying factory fabricated G. M. S. Ladder with 3 coats of zinc rich epoxy paint over a coat primer etc complete as directed.					
a	4 m long x 450 mm wide	2	Nos.			
	<b>SUB - TOTAL (TANKS)</b>					
<b>H</b>	<b>PUMPS AND EQUIPMENT</b>					
1	Water Transfer Pump for Single O.H. Tank					
	PUMPS: Providing, installation, testing and commissioning of totally Stainless Steel pumps having 304 SS casing, Bronze impellers, SS shaft and driven by suitable HP , 415 Volts, 50 cycles, AC 3 phase motor. Each pump should be capable of delivering as req demand, complete with all accessories, suction/discharge butterfly or gate valves, suction strainers, discharge non-return valves, pressure gauges, etc. complete and as directed.					
	PANELS: Providing, installation, testing and commissioning of sheet steel clad wall mounting control panel having suitably rated incoming isolating switch incoming voltmeter with selector switch and fuses. DOL starter with hand reset overload cum single-phase preventor type relay, ammeter to read current in any one phase. OFF/AUTO/MANUAL selector switch, pump changeover facility, dry run presenter switch and NHT Italian make and equivalent level switch for automatic control of pump and electronic toggle relay for automatic alternating of pumps.					
	Providing, installation, testing and commissioning of PVC armoured/ sheathed/insulated copper cables of the required ratings (as approved) with terminations, installation, accessories, cable trays, saddles, clamps, complete in all respects to all Plumbing Equipment from the above Power Panel located in the Pump room. Cost shall be inclusive of Supporting angle for Submersible pump.					
a	Domestic Water Transfer Pump					
	1 Set = 2 Nos. Pump (1 Working + 1 Standby)					
	TYPE OF PUMP = Centrifugal / or Submersible pump					
	Pump Capacity / Discharge = 170 lpm					
	outlet Head = 100 mwc	1	Sets.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
b	Flushing Water Transfer Pump					
	1 Set = 2 Nos. Pump (1 Working + 1 Standby)					
	TYPE OF PUMP = Centrifugal / or Submersible pump					
	Pump Capacity / Discharge = 250 lpm					
	outlet Head = 100 mwc	1	Sets.			
c	STP Treated Water Transfer Pump					
	1 Set = 2 Nos. Pump (1 Working + 1 Standby)					
	TYPE OF PUMP = Centrifugal / or Submersible pump					
	Pump Capacity / Discharge = 100 lpm					
	outlet Head = 100 mwc	1	Sets.			
d	Rain Water Transfer Pump (For Rain Water Harvesting Tank)					
	1 Set = 2 Nos. Pump (1 Working + 1 Standby)					
	TYPE OF PUMP = Centrifugal / or Submersible pump					
	Pump Capacity / Discharge = 100 lpm					
	outlet Head = 100 mwc	1	Sets.			
2	Sump Pump ( For BASEMENT STORM DRAINAGE SYSTEM / BASEMENT TOILET SEWAGE DRAINAGE SYSTEM )					
	PUMPS: Providing, installation, testing and commissioning of dewatering sewage sump pump with motor etc complete and as directed with necessary accessories and equipment (valves etc ) including the pump panel as required. complete with all accessories, suction/discharge butterfly or gate valves, suction strainers, discharge non-return valves, pressure gauges, etc. complete and as directed.					
	PANELS: Providing, installation, testing and commissioning of sheet steel clad wall mounting control panel having suitably rated incoming isolating switch incoming voltmeter with selector switch and fuses. DOL starter with hand reset overload cum single-phase preventor type relay, ammeter to read current in any one phase. OFF/AUTO/MANUAL selector switch, pump changeover facility, dry run presenter switch and NHT Italian make and equivalent level switch for automatic control of pump and electronic toggle relay for automatic alternating of pumps.					
	Providing, installation, testing and commissioning of PVC armoured/ sheathed/insulated copper cables of the					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	required ratings (as approved) with terminations, installation, accessories, cable trays, saddles, clamps, complete in all respects to all Plumbing Equipment from the above Power Panel located in the Pump room. Cost shall be inclusive of Supporting angle for Submersible pump.					
a	Sump Pump ( For Car pit Drainage + 4 Plumbing Duct drainage) (1 working + 1standby) Pump Capacity / Discharge =50 lpm outlet Head = 30 mwc	11	Sets.			
b	Sump Pump ( For Storm Water Drainage ) (1 working + 1standby) Pump Capacity / Discharge =50 lpm outlet Head = 20 mwc	2	Sets.			
c	Sump Pump ( For Toilet Sewage Drainage ) Ground Floor & Basement 1 (1 working + 1standby) Pump Capacity / Discharge =15 lpm outlet Head = 12 mwc	3	Sets.			
	(NOTE: Incoming cable to the panel will be in the scope of the Electrical Contractor, but the termination of it in the panel will be in the scope of the Plumbing Contractor)					
	<b>SUB-TOTAL ( PUMPS AND EQUIPMENT)</b>					
I	Sewage Treatment Plant (STP) Supply, Installation, Testing and Commissioning of Sewage Treatment Plant (STP) and complete as directed with all accessories.					
a	100 KLD	1	Sets.			
J	Organic Waste Composer Supply, Installation, Testing and Commissioning of Organic Waste Composer (OWC) and complete as directed with all accessories.					
a	500 KG	1	Sets.			
K	Approval of Plumbing System From Local Authority					
a	Liasoning work with Approval of Plumbing system from local authority and any other relevant statutory authority at initial & various other stages of works, including preparation of report / drawings	1	Lumpsu m			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	as per fire authority. Contractor shall include cost of all liaison works which are not explicitly mentioned above but are mandatory to have local authority approval (any statutory charges will be paid extra)					
	Official / Statutory charges					
b	Any Official / statutory charges will be paid extra (Scope of M/s. Client)	1	Lumpsu m			
	SUB - TOTAL (APPROVAL OF PLUMBING SYSTEM FROM LOCAL AUTHORITY)					
<b>10.</b>	<b>FIRE FIGHTING WORK</b>					
<b>1</b>	<b>FIRE FIGHTING PUMP</b>					
<b>1.1</b>	<b>ELECTRICALLY DRIVEN FIRE HYDRANT PUMP</b>					
	Supply Installation, testing and commissioning of electrically driven high pressure fire hydrant pump, suitable for automatic operation consisting of the following:					
	a. ( Horizontal Negative end suction / high pressure multistage, centrifugal pump or Submersible pump as per CFO NOC ), suitable for operation on 415 volts $\pm$ 6%, 3 phase, 50 HZ A.C supply. The installation shall be complete with flexible coupling and coupling guard as required. Fire pump shall have C.I. casing, CS diffusers, bronze impeller (hard finished and dynamically balanced) and C.S. (304) Shaft with mechanical seal, ensure a minimum pressure of 3.5 Kg/Sqcm at the farthest or topmost hydrant / sprinkler. The installation shall be complete with necessary pressure gauge with gun metal shut off cock on delivery side. (The pump should be tested for bench mark at factory and shall be gotten approved by the Local fire Authority).					
	b. Pump shall be capable of furnishing not less than 150% of rated capacity at a head of not less than 65% of the rated head. The shut off head shall not exceed 120% of rated head.					
	c. Squirrel cage induction motor, TEFC type suitable for operation on 415 volts, 3 phase 50 HZ A.C supply, for the above pump with synchronous speed of 2900 RPM, conforming to IP 55 protection & class F insulation. The motor shall conform to IS 325-1978 (up to date) with flexible coupling and coupling guard,					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	complete as required.					
	d. Common base plate for (a) and (b) from M.S. Channel for required size.					
	e. Suitable cement concrete foundation with cement concrete plaster (design and drawing to be provided by the Contractor while the foundation will be done by others) complete with anti-vibration arrangement of cushy foot mountings.					
<b>a</b>	<b>TYPE OF PUMP = Centrifugal / or Submersible pump</b>					
	<b>Pump Capacity / Discharge = 2400 lpm</b>					
	<b>outlet Head = 130 mwc</b>	<b>2</b>	Nos.			
<b>1.2</b>	<b>ELECTRICALLY DRIVEN FIRE SPRINKLER PUMP</b>					
	Supply Installation, testing and commissioning of electrically driven high pressure fire sprinkler pump, suitable for automatic operation consisting of the following:					
	a. ( Horizontal Negative end suction / high pressure multistage, centrifugal pump or Submersible pump as per CFO NOC ), suitable for operation on 415 volts $\pm$ 6%, 3 phase, 50 HZ A.C supply. The installation shall be complete with flexible coupling and coupling guard as required. Fire pump shall have C.I. casing, CS diffusers, bronze impeller (hard finished and dynamically balanced) and C.S. (304) Shaft with mechanical seal, ensure a minimum pressure of 3.5 Kg/Sqcm at the farthest or topmost hydrant / sprinkler. The installation shall be complete with necessary pressure gauge with gun metal shut off cock on delivery side. (The pump should be tested for bench mark at factory and shall be gotten approved by the Local fire Authority).					
	b. Pump shall be capable of furnishing not less than 150% of rated capacity at a head of not less than 65% of the rated head. The shut off head shall not exceed 120% of rated head.					
	c. Squirrel cage induction motor, TEFC type suitable for operation on 415 volts, 3 phase 50 HZ A.C supply, for the above pump with synchronous speed of <b>2900</b> RPM, conforming to IP 55 protection & class F insulation. The motor shall conform to IS 325-1978 (up to date) with flexible coupling and coupling guard, complete as required.					
	d. Common base plate for (a) and (b)					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	from M.S. Channel for required size.					
	e. Suitable cement concrete foundation with cement concrete plaster (design and drawing to be provided by the Contractor while the foundation will be done by others) complete with anti-vibration arrangement of cushy foot mountings.					
<b>a</b>	<b>TYPE OF PUMP = Centrifugal / or Submersible pump</b>					
	<b>Pump Capacity / Discharge = 2400 lpm</b>					
	<b>outlet Head = 130 mwc</b>	<b>1</b>	Nos.			
<b>1.3</b>	<b>JOCKEY PUMP</b>					
	Supplying of <b>Jockey pump</b> centrifugal horizontal type end suction top discharge back pullout type of 2900 RPM CI body with bronze impeller, bronze working parts, SS shaft and coupled to 2900 RPM motor F class motor (TEFC) insulation squirrel cage induction motor mounted on common base plate, nut, bolts with matching suction and discharge side flanges coupling guards and anti vibration rubber pads etc., complete					
<b>a</b>	<b>TYPE OF PUMP = Centrifugal / or Submersible pump</b>					
	<b>Pump Capacity / Discharge = 180 lpm</b>					
	<b>outlet Head = 130 mwc</b>	<b>2</b>	Nos.			
<b>1.4</b>	<b>BOOSTER PUMP</b>					
	Supply, Installation, testing and commissioning of Booster pump centrifugal horizontal type. The pump shall be of negative end suction top discharge type running at 2900 RPM, with CI body, bronze impeller, bronze working parts SS shaft, directly coupled to totally enclosed Fan cooled (TEFC) squirrel cage AC induction motor of capacity to operator on 3 Ph , 415 V 50 cycle AC with B/F class insulation both the pump and motor are to be erected on common MS base plate of required size with foundation bolts with matching suction and discharge side flanges, coupling guards and anti vibration rubber pads etc., complete					
<b>a</b>	<b>Pump Capacity / Discharge = 900 lpm</b>					
	<b>outlet Head = 32 mwc</b>	<b>2</b>	Nos.			
	<b>SUB - TOTAL (FIRE FIGHTING PUMP)</b>	<b>7</b>	<b>0</b>			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
2	<b>FIRE PUMPS PANEL &amp; ELECTRICAL WORK</b>					
2.1	<b>Fire Pumps Panel</b>					
2.1.1	<b>Fire Main Pumps Panel</b>					
	Supply Installation, testing and commissioning of automatic Starter panel switchgear unit for the above Main pump & jockey and sprinkler pumps , booster pumps to suit the motor H.P.for the rated capacity & desired head of the pumps,comprising of automatic switch unit, isolator, pressure switches to set operating pressures, switches rated to 440-V, 50 HZ supply to continuous maximum lead & electric supply companies / Ieregulations, contacts of suitable size / rating terminal boxes for A-AL cables suitably screwed, standard 250-V,15watt bayonetcap indicator lamps for the pump behind ruby domes suitably protected against damage interlocking arrangements as per LPA rules and requirements, auxillary switch / switches to provide audio & visual alarm both at pump room & MCP (Mainfireconsole) with acknowledge switches & reset switches.Auxilliary switches to be rated at 5 Amps,250 volts, 50 Hz complete with CT connected ammeters, voltmeters & 3-ph selector switches with ON/OFF for reading currents & voltages to be provided on the panel. All installation shall comply with IE rules, TAC/LPA guidelines BSES rules & NEC etc. complete.					
	<b>Note:</b>					
	1) All the components shall be housed in a common cubicle made of 16 swg. M.S. sheet with required stiffners ( if required). Panels shall be powder coated of approved colour both inside & out side. Panels shall have both bottom & top cable entry provisions and panel shall be mounted on Pedastal of 300 mm height.					
	2) Panels shall have sufficient (min. 50 Nos) NO/NC contacts for extending the status( annunciation) of fire pumps to the Fire alarm panel.					
	<b>INCOMING</b>					
	<b>Capacity:</b> xxxA, TPN ACB / MCCB					
	1 Set of 2000 Amps. TPN Al. Bus bars with colour coded heat shrinkable PVC sleeves.					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	1 Set of RYB indicating lamps with individual HRC control fuses.					
	1 No. 96 Sq.mm 0-2000 Amps. Ammeter with selector switch and suitable rated current transformers.					
	1 No. 0-500 Volts 96 Sq.mm Voltmeter with selector switch.					
	<b>OUTGOING</b>					
	<b>Feeder for Main Hydrant pumps - (1 Nos.)</b>					
	<b>Capacity:</b> xxx A C-Curve, TP MCCB / MCB					
	<b>Type of starters:</b> Star Delta starter / <del>Soft starter</del>					
	With:					
	over load relay, single phase preventor and indicating lamps with ON / OFF push buttons.					
	<b>Feeder for Stanby Hydrant pumps - (1 Nos.)</b>					
	<b>Capacity:</b> xxx A C-Curve, TP MCCB / MCB					
	<b>Type of starters:</b> Star Delta starter / <del>Soft starter</del>					
	With:					
	over load relay, single phase preventor and indicating lamps with ON / OFF push buttons.					
	<b>Feeder for Sprinklar pumps - (1 Nos.)</b>					
	<b>Capacity:</b> xxx A C-Curve, TP MCCB / MCB					
	<b>Type of starters:</b> Star Delta starter / <del>Soft starter</del>					
	With:					
	over load relay, single phase preventor and indicating lamps with ON / OFF push buttons.					
	<b>Feeder for Jockey pump (2 nos.)</b>					
	<b>Capacity:</b> xxx A TP MCB / MCCB					
	<b>Type of starters:</b> Star Delta starter /DOL starter					
	With:					
	over load relay, single phase preventor and indicating lamps with ON / OFF push buttons.					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>Feeder for Booster pumps (1 nos.)</b>					
	<b>Capacity:</b> xxx A C-Curve, TP MCB					
	<b>Type of starters:</b> Star Delta starter /DOL starter					
	<b>With:</b>					
	over load relay, single phase preventor and indicating lamps with ON / OFF push buttons.					
	<b>Feeder for Diesel Engine Pump (0 nos.)</b>					
	Feeder for Diesel Engine Pump 2 Nos 20 A DPMCC					
	<b>All above works</b>	<b>1</b>	Nos.			
<b>2.1.2</b>	<b>Start / Stop Push Button for Booster pump</b>					
	Supply Installation, testing and commissioning of Emergency Start / Stop Push Button station weather proof type for Booster pump at all Floor and terrace level.	<b>34</b>	Set.			
<b>2.2</b>	<b>Cables &amp; Accessories</b>					
<b>2.2.1</b>	<b>LT Cable (Power Cabling)</b>					
	Supply and laying of 1.1kV Voltage grade, aluminium / copper conductor, XLPE insulated, steel armoured, power / control cables. The cables shall be laid in tray / hume pipe / in ready made trenches, with nylon cable ties / MS Clamps @ 600mm interval etc., as required.					
	<b>Note:</b>					
	<b>Two Runs of Cable Due to Star delta Starter</b>					
<b>i</b>	<b>Qty. from Fire Pumps Panel to Pump Aluminium</b>					
<b>a</b>	3 Core 70 sq. mm Armoured Aluminium cable. (100 HP)		Mtrs			
<b>b</b>	3 Core 50 sq. mm Armoured Aluminium cable. (75 HP)		Mtrs			
<b>c</b>	3 Core 35 sq. mm Armoured Aluminium cable. (60 HP) ( <b>Hydrant Pump =1 no + Sprinklar Pump=1no</b> )		Mtrs			
	<b>Copper</b>					
<b>a</b>	3 Core 50 sq. mm Armoured Copper cable. (100 HP)		Mtrs			
<b>b</b>	3 Core 35 sq. mm Armoured Copper cable. (75 HP)		Mtrs			
<b>c</b>	3 Core 25 sq. mm Armoured Copper cable. (60 HP)		Mtrs			
<b>d</b>	3 Core 16 sq. mm Armoured Copper cable.		Mtrs			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	(45 HP to 50 HP)					
e	3 Core 10 sq. mm Armoured Copper cable. (35 HP to 40 HP)		Mtrs			
f	3 Core 6 sq. mm Armoured Copper cable. (20 HP to 30 HP)		Mtrs			
g	3 Core 4 sq. mm Armoured Copper cable. (12.5 HP to 15HP)		Mtrs			
h	3 Core 2.5 sq. mm Armoured Copper cable. (Upto 10 HP) ( <b>Booster Pumps = 1no</b> ) ( <b>Jockey Pumps = 2nos</b> )		Mtrs			
ii	<b>Qty. For Control Panel of Diesel Engine Pump</b>					
a	2C x 2.5 Sqmm. Armoured Copper cable for Diesel engines		Mtrs			
b	2C x 2.5 Sqmm Armoured Copper cable. .for Instrumentation		Mtrs			
iii	<b>Qty. For Start / Stop Push Button for Booster pump</b>					
a	3C x 2.5 Sqmm. Armoured Copper cable.		Mtrs			
iv	<b>Qty. For Control Cable of Pressures switches</b>					
	2C x 1.5 Sqmm Armoured Copper cable.		Mtrs			
v	<b>All Cables works as per above i to iv</b>	<b>1</b>	Lot			
2.2.2	<b>Cable Terminations</b>					
	Termination of the above cables with Heavy duty double compression Brass cable glands & copper heavy duty lugs with bi metallic rings. (4c/3.5c/3c)					
i	<b>Qty. from Fire Pumps Panel to Pump Aluminium</b>					
a	3 Core 70 sq. mm Armoured Aluminium cable. (100 HP)		Mtrs			
b	3 Core 50 sq. mm Armoured Aluminium cable. (75 HP)		Mtrs			
c	3 Core 35 sq. mm Armoured Aluminium cable. (60 HP) ( <b>Hydrant Pump =1 no + Sprinklar Pump=1no</b> )		Mtrs			
	<b>Copper</b>					
a	3 Core 50 sq. mm Armoured Copper cable. (100 HP)		Nos.			
b	3 Core 35 sq. mm Armoured Copper cable. (75 HP)		Nos.			
c	3 Core 25 sq. mm Armoured Copper cable. (60 HP)		Nos.			
d	3 Core 16 sq. mm Armoured Copper cable. (45 HP to 50 HP)		Nos.			
e	3 Core 10 sq. mm Armoured Copper cable. (35 HP to 40 HP)		Nos.			
f	3 Core 6 sq. mm Armoured Copper cable.		Nos.			



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	(20 HP to 30 HP)					
g	3 Core 4 sq. mm Armoured Copper cable. (12.5 HP to 15HP)		Nos.			
h	3 Core 2.5 sq. mm Armoured Copper cable. (Upto 10 HP) ( <b>Booster Pumps = 1no</b> ) ( <b>Jockey Pumps = 2nos</b> )		Nos.			
ii	<b>Qty. For Control Panel of Diesel Engine Pump</b>					
a	2C x 2.5 Sqmm. Armoured Copper cable for Diesel engines		Nos.			
b	2C x 2.5 Sqmm Armoured Copper cable. .for Instrumentation		Nos.			
iii	<b>Qty. For Start / Stop Push Button for Booster pump</b>					
a	3C x 2.5 Sqmm. Armoured Copper cable.		Nos.			
iv	<b>Qty. For Control Cable of Pressures switches</b>					
	2C x 1.5 Sqmm Armoured Copper cable.		Nos.			
v	<b>All Cables Terminations works as per above i to iv</b>	<b>1</b>	Lot			
<b>2.2.3</b>	<b>Cable Trays ( Perforated Type)</b>					
	Supply & installations of Pre Galvanised 60 microns, 2.mm Thick, 50mm height, readymade <b>Perforated Type</b> cable trays complete with couplers, bends etc. The rate to include supports of 25x25mmx3mm of angle with 10mm verticle rods fixed with 6mm Anchor fasteners. The vertical support shall be placed at interval of not more than 1.5 Metrs & at all bends.					
a	200mm wide x 50mm height		Mtrs			
b	150mm wide x 50mm height		Mtrs			
c	<b>All Cable Trays works as per above i to iii</b>	<b>1</b>	Lot			
<b>2.2.4</b>	<b>Earthing</b>					
	G.I. Earthing strips of 50mm x 6mm thick, strip shall run on floor / ceiling / walls, from the equipment to the nearest Earth pit with necessary accessories as required.	<b>1</b>	Lot			
	<b>(Scope of M/s. Elect Vendor Scope)</b>					
	<b>NOTE:</b>					
	Incoming cable to the panel will be in the scope of the Electrical Contractor, but the termination of it in the panel will be in the scope of the Fire Contractor					
	<b>SUB - TOTAL (FIRE PUMPS PANEL &amp; ELECTRICAL WORK)</b>	39				

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
<b>3</b>	<b>PUMP ROOM &amp; TERRACE (PIPING + VALVE)</b>					
<b>3.1</b>	<b>"C" class G.I Pipes</b>					
	Providing & Laying "C" class G.I Pipes as per IS 1239 with screwed ends including ' all necessary heavy quality fitting such as bends,tees,elbows,coupling reducers, unions,checkneuts etc., joining with Teflon tapes structural supports including cutting welding ,threading as required etc., all complete. The pipes shall be painted with 2 coats of primer & 2 coats of finishing paints as per painting procedure mentioned in technical specifications.					
a	80 mm dia.	<b>30</b>	Mtr			
b	100 mm dia.	<b>30</b>	Mtr			
c	150 mm dia.	<b>45</b>	Mtr			
d	200 mm dia. (Header)	<b>5</b>	Mtr			
<b>3.2</b>	<b>Butterfly valve</b>					
	Supply, installation, testing and commissioning of Butterfly valve with flanges, nut bolts, gaskets and necessary pad locking arrangement complete required.					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	<u>PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)</u>					
a	80 mm dia.	<b>4</b>	Nos			
b	100 mm dia.	<b>4</b>	Nos			
c	150 mm dia.	<b>6</b>	Nos			
d	200 mm dia.	<b>1</b>	Nos			
<b>3.3</b>	<b>Non Return Valves</b>					
	Supply, installation, testing and commissioning of C.I. double flanged NRV with matching flanges of following sizes complete in all respect as per spec.					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	<u>PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)</u>					
a	80 mm dia.	<b>2</b>	Nos			
b	100 mm dia.	<b>2</b>	Nos			
c	150 mm dia.	<b>3</b>	Nos			
d	200 mm dia.	<b>1</b>	Nos			
<b>3.4</b>	<b>Y-Strainer</b>					
	Supplying, installing and commissioning C.I.flanged "Y" type Strainer with SS mesh,suitable flanges, nuts, bolts, gaskets					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	etc. complete.					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	<u>PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)</u>					
a	80 mm dia.	2	Nos			
b	100 mm dia.	2	Nos			
c	150 mm dia.	3	Nos			
d	200 mm dia.		Nos			
<b>3.5</b>	<b>Flanged flexicon rubber expansion joint (Below)</b>					
	Providing & fixing double flanged flexicon rubber expansion joint (suitable for system test pressure) of standard length as per manufacturers specs including rubber gaskets, flanges, nuts, bolts and washers complete as required.					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	<u>PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)</u>					
a	80 mm dia.	4	Nos			
b	100 mm dia.	4	Nos			
c	150 mm dia.	6	Nos			
<b>3.6</b>	<b>Pressure Gauge</b>					
	Dial type (100 mm) pressure gauge, glycerin filled with S.S. bourdon tube with isolation ball valve suitable for working pressure of 250 PSI. Cost shall be inclusive of providing any short pieces, nipples, elbows etc as required.					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)	7	Nos			
ii	PN 16 (16 Bar / 16 kg/sq.cm / 160 m of H2O / 232 psi)		Nos			
<b>3.7</b>	<b>Pressure Switch</b>					
	Supply, installation, testing and commissioning of pressure switch complete in all respect as per spec. no. complete in all respect as per spec. .					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)	7	Nos			
<b>3.8</b>	<b>Inspectors test assembly complete with test valve</b>					
	Providing and fixing inspectors test assembly complete with test valve, sight					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	glass sectional drain valve, union with corrosion resistant orifice all complete strictly as per drawing. (1 no. for hydrant + 1 no. for sprinkler)					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)	2	Nos			
<b>3.9</b>	<b>Control Valve with turbine type automatic Alarm Gong (for Sprinklers system)</b>					
	Providing & Fixing of Installation Control Valve with turbine type automatic Alarm Gong to be connected with control valve, drain & test valve and all other necessary components as per manufacturer's specifications complete as required.					
a	150 mm dia	1	No.			
<b>3.10</b>	<b>Precharged air Vessel (Air Vessel) at Terrace Level</b>					
	Providing, fixing, testing and commissioning of precharged air vessel (size 450 mm dia & 2000 mm height) for pressurization of hydrant / sprinkler system complete with adequate pressure switches (as per design / requirement) with valves to operate as per operating sequences including 25 mm dia drain valve, air release valve with stop cock on the top, 25 mm dia inlet with isolating valve duly painted from inside and outside complete as required.	1	Set			
<b>3.11</b>	<b>Priming Tank (For -ve section)</b>					
	Providing, fixing, testing & commissioning of One piece HDP / Fibrewater Tank for -ve section only having capacity 1000 lts. Fitted with necessary accessories.	1	Set			
<b>3.12</b>	<b>Float Level Switches</b>					
	Providing / Fixing Providing, fixing, jointing and testing in position the following Top Mounted Guided Float Level Switches and Electronic Control Switches including all necessary fittings required for installation etc.( Make : Mahalaxmi Instruments) e Project Manager complete with probes & all control wiring etc. <b>Note :</b> Contractor shall include in his rates for providing level controllers, pressure switches, wiring, cabling from level controller / pressure switch to panel etc.	1	Nos			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	complete as required to operate the system automatic/manual. Pump shall be protected against running dry.					
	<b>SUB - TOTAL (PUMP ROOM PIPING AND VALVE)</b>					
<b>4</b>	<b>HYDRANT, PIPING &amp; ACCESSORIES</b>					
4.1	<b>GI `C' Heavy class pipe (Non Trenches )</b>					
	Providing, laying, jointing, testing and commissioning of following sizes of GI `C' Heavy class pipe conforming to IS-1239 with all accessories like all fittings including tees, elbows, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer including supporting/fixing the pipe on floor / wall /ceiling with clamps, hangers (using anchor fastners) as per specification. G.I. pipe sleeve of suitable higher size shall be provided wherever the pipes are crossing the walls/floors and sealing the sleeves with glass wool in between & fire sealent compound at either end all as per Project Manager's / Consultants requirements including cutting holes and chases in brick, R.C.C work and making good the same to original conditions complete in all respects. All hangers, clamps, brackets etc. shall be of galvanized iron unless specified otherwise and then supply of the same shall also be included for rates under this head.. Welding of any kind on the galvanized support / hanger shall not be permitted.					
	Providing two coats of synthetic enamel paint of approved shade over a coat of primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends both direction arrow as per the approval of the Project Manager					
	For wet riser System - GI `C' Heavy class pipe					
a	80 mm dia	<b>350.7</b>	RM			
c	150 mm dia	<b>1176</b>	RM			
d	200 mm dia		RM			
4.2	<b>GI `C' Heavy class pipe (In Trenches )</b>					
	Providing, laying, jointing and testing in trenches the following sizes of GI class `C' (heavy class) pipes conforming to IS:1239 with accessories like fittings including					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	tees, elbows, reducers, flanges, rubber gaskets, G.I. nuts, bolts and washers including excavation in all kind of soil, refilling, ramming, shoring, removing the excavated surplus material, providing adequate support to the pipe and making good the same complete as required. Rate shall include for dewatering necessary to execute the work. The pipe shall not be less than 1.0 m below ground level at any point.					
	Providing protection to embedded GI pipes and fittings by applying protective primer (@ 100 gm/sqm) thereafter wrapping 4 mm thick protection coating by thermo fusion process. Overlap shall be maintained at 15 mm. The application process shall be strictly according to manufacturer's specification.					
c	150 mm dia	42	RM			
4.3	<b>Brass Ball Valve</b>					
	Providing and fixing forged brass ball valve with forged brass ball (Cost shall be inclusive of providing necessary union / flange connection).					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)					
a	25 mm dia		No.			
b	32 mm dia		No.			
c	40 mm dia		No.			
d	50 mm dia		No.			
Ii	PN 16 (16 Bar / 16 kg/sq.cm / 160 m of H2O / 232 psi)					
a	25 mm dia		No.			
b	32 mm dia		No.			
c	40 mm dia		No.			
d	50 mm dia		No.			
4.4	<b>Butterfly Valve</b>					
	Providing & fixing of butterfly valve with flanges, nut bolts, gaskets and necessary pad locking arrangement complete required.					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)					
a	80 mm dia	38	No.			
4.5	<b>Orifice plate / Pressure reducing disc</b>					
	SS orifice plate of thickness 5 mm					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	complete with identification tag, rubber insertions, G.I. nuts, G.I. bolts, G.I. washers etc suitable for following pipe sizes:					
a	80 mm dia NB	34	Nos			
4.6	<b>External fire hydrant</b>	6				
4.6.i	<b>Fire hydrant landing valve</b>					
	Providing & fixing gun metal / SS fire hydrant single / Double landing valve with 80 mm N.B. flanged inlet, brass spindle controlled 63 mm dia female instantaneous outlet type. G.M. / SS coupling, blank cap, chain, twist release type lug & all accessories Conforming to IS:5290.					
	<u>Single landing Valve</u>					
b	SS Material	6	Nos.			
4.6.ii	<b>"FIRE HOSE" cabinet with Assemble</b>					
1	<b>FIRE HOSE cabinet</b>					
	Providing and fixing weather proof lockable cabinet of size not less than 0.75 x 0.60 x 0.25 mtr made out of MS sheet of 16 gauge thickness having central opening and 4 mm thick glazed glass doors two nos. (4mm thick glass with rubber bedding) suitably marked on the outside with the letters "FIRE HOSE" including necessary locking arrangement and shall be painted with one coat of primer and two coats of synthetic enamel paint of approved shade. The cabinet shall be suitable to accommodate 2 nos. or 4 nos 15 mtr long Hose pipe & 1 nos or 2 nos branch pipe nozzle. It shall be mounted on raised Brick platform complete as required. (Cost shall be inclusive of providing break glass box containing key for the cabinet along with hammer).					
	<u>Double Door</u>					
a	750 x 600 x 250 (L X W X D)	6	No.			
	<u>Single Door</u>					
b	450 x 450 x 250 (L X W X D)		No.			
2	<b>Fire Canvas hose pipe</b>					
	Providing & fixing controlled <i>percolation</i> fire hose pipe (as per IS:8423) of 63 mm dia and 15 meter length rated for burst pressure of 35.7 Kg/sqcm. The hose shall be tested for flame resistance test in accordance to IS:8423.					
a	63 mm dia and 15 meter lengthx 2 nos.	6	Set			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
3	<b>Coupling for Hose Pipe</b>					
	Providing and Fixing ISI marked brass male & female coupling (IS:903) bound & riveted to hose pipe with copper rivets & 1.5 mm copper wire, complete as required.					
a	with ss Material	6	Nos.			
4	<b>Branch pipe Nozzle</b>					
	Providing and Fixing rising Branch pipe Nozzle with complete as required.					
a	with ss Material	6	Nos.			
4.7	<b>Internal fire hydrant</b>	44				
4.7.i	<b>Fire hydrant landing valve</b>					
	Providing & fixing gun metal / SS fire hydrant single / Double landing valve with 80 mm N.B. flanged inlet, brass spindle controlled 63 mm dia female instantaneous outlet type. G.M. / SS coupling, blank cap, chain, twist release type lug & all accessories Conforming to IS:5290.					
	<u>Single landing Valve</u>					
a	SS Material	44	Nos.			
2	<b>"FIRE DUCT DOOR" (If Fire Shaft/Duct in project)</b>					
	Providing and fixing 5 mm thick glass door (with M.S. frame) of size 1.5 m x 0.9 m with center opening for fire hose cabinet. Suitably marked on the outside with the letters "FIRE HOSE" including locking arrangement. All M.S. work to be in Red P.O. colour over appropriate primer. The above item is only for masonry fire station.					
	<u>Double Door</u>					
a	Size 1200mm x 900 mm (H x L)	44	No.			
3	<b>Fire Canvas hose pipe</b>					
	Providing & fixing controlled <i>percolation</i> fire hose pipe (as per IS:8423) of 63 mm dia and 15 meter length rated for burst pressure of 35.7 Kg/sqcm. The hose shall be tested for flame resistance test in accordance to IS:8423.					
a	63 mm dia and 15 meter lengthx 1 no.	44	Nos.			
4	<b>Coupling for Hose Pipe</b>					
	Providing and Fixing ISI marked brass male & female coupling (IS:903) bound & riveted to hose pipe with copper rivets & 1.5 mm copper wire, complete as required.					
a	with ss Material	44	Nos.			



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
5	<b>Branch pipe Nozzle</b>					
	Providing and Fixing rising Branch pipe Nozzle with complete as required.					
a	with ss Material	44	Nos.			
6	<b>Swinging type First hose reel Drum with Assemble</b>					
	Providing & fixing swinging type First Aid hose reel in red colour drum with 30 mts long and 20 mm dia heavy duty rubber water hose, 20 mm dia globe valve stop cock, terminating with G.M. coupling & nozzle of 6mm outlet with shut off valve conforming to IS 8090 - 1976 complete with MS socket for tap-off, drum and brackets (including painting) for fixing on wall with anchor fastner, bolts & nuts conforming to IS:884-1969 complete as required.					
a	with ss coupling & nozzle	44	Nos.			
4.8	<b>4-way fire brigade connection</b>					
	Providing & fixing gun-metal fire brigade connection (suction collecting head) consisting of 4 Nos. 63 mm dia instantaneous type male couplings with built-in check valves, 1 No. 150 mm dia Butterfly valve, 1 No. 150 mm dia non-return valve and 150 mm dia flanged outlet complete with bolts, nuts and rubber insertions as required and as per IS:904-1963.					
a	with Stainless Steel	1	Set			
4.9	<b>2-WAY Fire brigade suction hose</b>					
	Providing & fixing gun-metal fire brigade suction hose coupling (draw-out connection) with nut for female coupling as per IS: 902-1974 complete with 100 mm dia GI suction pipe and 100 mm dia foot valve (to be connected to static tank). Provision of GI drop pipe and foot valve shall be made in all the fire water static storage tanks (4 Nos) (GI pipe to be paid separately through appropriate item while cost of foot valve to be included).					
a	with Stainless Steel	1	Set			
	<b>SUB - TOTAL (HYDRANT, PIPING &amp; ACCESSORIES)</b>					
5	<b>SPRINKLER, PIPING &amp; ACCESSORIES</b>					
5.1	<b>GI `C' Heavy class pipe (Non</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>Trenches )</b>					
	Providing, laying, jointing and testing of following sizes of <b>GI `C' Heavy class pipe</b> conforming to IS-1239 with all accessories like all fittings ( all pipes & fittings shall be forged steel with welded joint shall be used) including tees, elbows, reducers, union, flanges, rubber gaskets, GI nuts bolts, washer including supporting/fixing the pipe on floor / wall /ceiling with clamps, hangers (using anchor fastners) as per specification. G.I. pipe sleeve of suitable higher size shall be provided wherever the pipes are crossing the walls/floors and sealing the sleeves with glass wool in between & fire sealant compound at either end all as per Project Manager's requirements including cutting holes and chases in brick, R.C.C work and making good the same to original conditions complete in all respects. All hangers, clamps, brackets etc. shall be of galvanized iron unless specified otherwise and the supply of the same shall also be included in rates under this head. Welding of any kind on the galvanized support / hanger shall not be permitted.					
	Providing two coats of synthetic enamel paint of approved shade over a coat of primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends both direction arrow as per the approval of the Project Manager					
a	25 mm dia	<b>1585.5</b>	RM			
b	32 mm dia	<b>709.8</b>	RM			
c	40 mm dia	<b>346.5</b>	RM			
d	50 mm dia	<b>346.5</b>	RM			
e	65 mm dia	<b>346.5</b>	RM			
f	80 mm dia	<b>960.75</b>	RM			
g	100 mm dia	<b>441</b>	RM			
h	150 mm dia	<b>231</b>	RM			
5.2	<b>GI `C' Heavy class pipe (for drainage purpose )</b>					
	Providing, fixing, jointing and testing in position the for drainage purpose following heavy class (Class C) G.I. pipes conforming to IS:1239 cut to required lengths including all necessary fittings (All fittings shall confirm to IS:1879 (part 1 to 10) and specials such as bends, tees, unions, Reducers, flanges & plugs etc. fixing at wall / ceiling level supported by clamps, hangers (using anchor fastners)					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	etc, as per specification. Threading, jointing, and making proper connections, cutting hole in wall / floor / slab and making good the same. GI pipe sleeves suitable higher size shall be provided wherever the pipes are crossing the fire rated walls / floors slab and sealing the sleeves with glass wool in between and fire sealent compound at either end all as per Project Manager's / Consultant requirement. All hangers, clamps, brackets etc. shall be of galvanized iron unless specified otherwise and the supply of the same shall also be included in rates under this head. (Fire sealent shall be provided to the contractor free of cost). Welding of any kind on the galvanized support / hanger shall not be permitted.					
	Providing two coats of synthetic enamel paint of approved shade over a coat of primer. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. Including painting of legends both direction arrow as per the approval of the Project Manager					
a	25 mm dia	33.6	RM			
b	80 mm dia	157.5	RM			
5.3	<b>Brass ball valve (for Sprinkler &amp; drainage)</b>					
	Providing and fixing forged brass ball valve with forged brass ball of the following size including providing necessary union / flange.					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)					
a	25 mm dia	32	No.			
5.4	<b>Butterfly valve (for Sprinkler &amp; drainage)</b>					
	Providing & fixing of butterfly valve with flanges, nut bolts & gaskets complete required. Butterfly valve shall be with pad locking arrangement.					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)					
a	65 mm dia	1	No.			
b	80 mm dia	50	No.			
c	100 mm dia	29	No.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
5.5	<b>Orifice plate / Pressure reducing disc</b>					
	SS orifice plate of thickness 5 mm complete with identification tag, rubber insertions, G.I. nuts, G.I. bolts, G.I. washers etc suitable for following pipe sizes:					
a	65 mm dia NB	1	Nos			
b	80 mm dia NB	2	Nos			
c	100 mm dia NB	29	Nos			
5.6	<b>Water flow switches</b>					
	Providing and Fixing electrically operated water flow switches (Vane type) including tamper switch and accessories, complete with tap off socket arrangement as required, with potential free contact with 2 Nos. NONC.					
	Note: Suitable for test pressure of 1.5 time of rated pressure.					
i	PN 10 (10 Bar / 10 kg/sq.cm / 100 m of H2O / 145 psi)					
a	63 mm dia	1	No.			
b	80 mm dia	2	No.			
c	100 mm dia	29	No.			
5.7	<b>Sprinklers</b>					
	Providing & fixing brass quartzoid sprinklers (UL approved) of 15 mm dia size, suitable for sustaining the pressure on the seat & water hammer effect. The type & temperature rating shall be as follows : Note					
	i. All sprinkler shall be chrome finish coated except for the concealed ones. The concealed sprinkler shall be of brass finish. The cover plates of the concealed sprinkler shall be factory painted at manufacturer's work and the shade shall be confirmed prior to application on the cover plate.					
	ii. The sprinkler shall be either pendent OR upright type and shall not be universal style / nature.					
	iii. Contractor shall ensure provision of sprinkler guard at no additional cost, as required by the Project Manager.					
	iv. Shop drawing for multi spray sprinkler system shall be submitted for comment / approval to the owner / project manager /consultant.					
	v. quartzoid bulb type UL/FM Approved and as per IS 9972					
a	15 mm dia. @ 68 Deg.C ( Pendent Type)	636.3	Nos			
b	15 mm dia. @ 68 Deg.C ( Side wall Type)	90.3	Nos			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
5.8	<b>Flexible Sprinkler drop assembly</b>					
	Providing & fixing of Flexible Sprinkler drop assembly consist of S.S. braided hose, sprinkler reducer, nipple, bracket, clamps & adaptor etc. complete.					
a	700 mm long ( FOR ENTRANCE LOBBY ONLY)	<b>60</b>	Nos			
5.9	<b>Inspectors test assembly complete with test valve</b>					
	Providing and fixing inspectors test assembly complete with a corrosion resistant bronze quarter turn ball test valve, cast iron body with dual glass lenses mounted in plated steel <b>sight glass</b> sectional drain valve, union with a chrome plated, corrosion resistant bronze quarter turn ball valve with a 5.6K smooth bore test orifice. All of the pipe thread connections are assembled with a Teflon based pipe joint sealant and each assembly tested to 350 psi (24,1 bar). <b>(For sprinkler branch pipe)</b>					
a.	25mm dia	<b>16</b>	Set			
	<b>SUB - TOTAL (SPRINKLER, PIPING &amp; ACCESSORIES)</b>					
<b>6</b>	<b>FIRE EXTINGUISHERS</b>					
<b>6.1</b>	<b>FIRE EXTINGUISHERS</b>					
	<b>Make: SAFEX / CEASEFIRE</b>					
1	<b>Fire Extinguisher</b>					
	Supply, installation, testing and commissioning of following types of extinguisher with provision of wall bracket (fixed with anchor fastner).					
1.1	<b>Dry Chemical Power Type (ABC)</b>					
	Portable Dry Chemical Power Type Fire Extinguisher with Gun Metal cap and nozzle and complete in all respects including initial fill and wall suspension bracket					
a	<b>ISI marked (IS:2171) Gas Cartridge Type</b>					
i	Capacity 9 Kg	<b>108</b>	Nos.			
<b>6.2</b>	<b>Fire Buckets</b>					
	Supplying and installing at approved location approved make fire buckets of 24 gauge galvanized steel sheet, standard 9 litre capacity and of round bottom shape, painted white inside and red outside and black on the bottom, inscribed with	<b>4</b>	Nos.			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	letters "FIRE" in black and gold. Cost shall be inclusive of providing MS stand duly painted over a coat of primer.					
	<b>SUB - TOTAL ( FIRE EXTINGUISHERS )</b>					
<b>7</b>	<b>FIRE SAFETY SIGNS</b>					
7.1	<b>Fire Safety Signs</b>					
	Supply, installation, testing and commissioning of Fire Safety Signs as per spec. no. complete in all respect as per spec. .					
i	<b>Self Glow base Sticker</b>					
	3mm Rigid Plastic & Self Adhesive Vinyl					
a	Fire Hose Reel	<b>32</b>	Nos.			
b	Fire Extinguisher	<b>106</b>	Nos.			
c	Fire Call Point	<b>32</b>	Nos.			
d	Lift not use	<b>32</b>	Nos.			
d	Refuge Area	<b>1</b>	Nos.			
e	Assembly Point	<b>1</b>	Nos.			
7.2	<b>Escape Route Signs</b>					
	Supply, installation, testing and commissioning of Escape Route Signs as per spec. no. complete in all respect as per spec. .					
i	<b>Self Glow base Sticker</b>					
	3mm Rigid Plastic & Self Adhesive Vinyl					
a	EXIT	<b>118</b>	Nos.			
b	Emergency Exit	<b>32</b>	Nos.			
	<b>SUB - TOTAL (CIVIL WORK)</b>					
<b>8</b>	<b>APPROVAL OF FIRE SYSTEM FROM LOCAL FIRE AUTHORITY</b>					
8.1	<b>Liasoning work</b>					
a	Liasoning work with Approval of fire hydrant & sprinkler system from local fire authority and any other relevant statutory authority at initial & various other stages of works, including preparation of report / drawings as per fire authority. Contractor shall include cost of all liaison works which are not explicitly mentioned above but are mandatory to have fire authority approval	<b>1</b>	Lumpsu m			
8.2	<b>Official / Statutory charges</b>					
a	Any Official / statutory charges will be paid extra <b>(Scope of M/s. Client)</b>	<b>0</b>	Lumpsu m			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>SUB - TOTAL (APPROVAL OF FIRE SYSTEM FROM LOCAL FIRE AUTHORITY)</b>					
	<b>H V A C</b>					
	HIGH SIDE					
1.0	Supply & Installation of VRV or VRF OODU / IDU and Other Accessories					
	Note: Anti corrosive resistance pant on all Out Door Unit and In Door Unit with also 100% on Copper pipe.					
1.1	VRV or VRF Out-Door Units					
	Supply & Installtionof VRV or VRF Out-door units System with R410A Refrigerant Note: ( The Prices of ODU is including with REFNET Joints for Out door Units )					
a	10 HP	No.	3			
1.2	VRV or VRF of In-Door Units					
	Supply & Installation VRV or VRF In-Door Units System with R410A Refrigerant					
1.3	Ductables Ceiling concealed type					
a	10.0 HP	No.	3			
1.4	Remote control					
	Supply & Installation of Remote control					
a	Corded Remote control for (Ductable/FCU)	No.	3			
1.5	REFNET Joints					
a	Supply & Installtion of All REFNET Joints for IDU only	No.	2			
1.6	Centralised Remote Controller system (CRC)					
	Supply & Installtion of Centralised Remote Controller system of VRV system for all the indoor & outdoor units.					
a	Only ON/OFF Type Centralised Remote Controller system	No.	1			
	<b>SUB - TOTAL (HIGH SIDE)</b>					
	LOW SIDE					
2.0	REFRIGERANT PIPING					
	Supply, Installation, Testing and Commissioning of All refrigerant piping between indoor & outdoor units duly insulated and covered with Aluminium foil as per specifications. All piping inside the room shall be properly supported with hanger and exposed pi					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
b	10 HP	No.	3			
2.1	Refrigerant Charging					
	Supply, Installation, Testing and Commissioning charges along with Topping-up of Refrigerant	Lot	1			
2.2	Trey for Refrigerant Piping	Lot	1			
	Size as per applicable					
	<b>SUB - TOTAL (REFRIGERANT PIPING)</b>					
3.0	<b>FRAME WORK</b>					
	Supply, fabrication and installation, Testing and Commissioning of MS base frame for outdoor units complete with epoxy painting, vibration isolation pads, supports, hangers, railing, brackets etc.					
	Note: For constructions approved by Architect/ Consultant. Apply 2 coats of epoxy primer and 2 coats of finish painting (black paint) as approved by Architect. Stand to be made as per site conditions.					
b	10 HP	No.	3			
	<b>SUB - TOTAL (FRAME WORK)</b>					
4.0	<b>DRAIN PIPING</b>					
4.1	PVC Drain					
	Condensate Drain Water piping constructed out of PVC / HDPE hard pipes, fitting, accessories, bends, elbows, tees, flanges, tappings, wall sleeves, hangers, supports, anchors. The pipes to be duly insulated with 10 mm Nitrile rubber insulation .					
a	32 mm Dia	RMT	50			
b	25 mm Dia	RMT	10			
	<b>SUB - TOTAL (DRAIN PIPING )</b>					
5.0	<b>SHEET METAL WORK</b>					
5.1	GI Duct					
	Fabrication, supply, installation, testing & commissioning of Galvanised Iron ( GI ) shall conform IS: 227 – 1977 Sheet ducting complete with splitter dampers, turning vanes, access doors, supports etc. as per drawings and specifications. Supports for duct					
	Note : All exposed ventilation duct work should be painted with 2 coats of epoxy primer and 2 coats of epoxy paint. All the supports of the duct will be painted to					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	match the ducting. Please note that the supports for ducting have to be taken from the ceili					
	Prefered makes : (Tata, Jindal).					
	As per Fabrication & Factory L shape					
a	20 G Ducting (upto 1500mm upto 2250mm any side)	Sq.Ft.	200			
b	22 G Ducting (above 750mm upto 1500mm anyside)	Sq.Ft.	400			
c	24 G Ducting (upto 750mm any side)	Sq.Ft.	1400			
5.2	Continous Linear Grilles					
	Supply, installation,testing and commissioning of following sizes of Aluminium extruded powder coated continous grilles with 4 side flanges					
	Note : If required Contractor should blank off the extra portion of grille without additional cost and provide deflection of 0 deg to 45 deg without extra cost					
a	200mm wide	SQFT	1			
b	150mm wide	SQFT	70			
5.3	Fire Dampers					
	Supply, installation of fire dampers with control cabling at the unit outlet.					
a	Fire dampers in supply air duct	SQFT	10			
5.4	Volume Control Dampers for Duct					
	Supply, installation, testing and commissioning of volume control dampers at Machine outlet and in Branch duct. (Gear Operated and Low Leakage)	SQFT	10			
5.5	Volume Control Dampers for S.A Collar					
	Supply and Installation of Black MS Box-Type Volume Control Dampers for Coller.	SQFT	10			
5.6	Canvass Connections					
	Supply, installation, testing and commissioning of Flexible double Canvass Connections for DUCTABLE, FCU & FAN.	NOS	3			
5.7	Sound attenuators					
	Supply, installation, testing and commissioning of Sound attenuators as per the supply air duct sizes shown in the drawings.	SQFT	10			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
5.8	Outdoor Units COWL piece with rain protection louvers					
	Supply, installation, testing and commissioning of outdoor connection with rain protection louvers, GI wiremesh, cowl & dampers.	NOS	3			
	<b>SUB - TOTAL (SHEET METAL WORK)</b>					
6.0	<b>THERMAL &amp; ACOUSTIC INSULATION</b>					
6.1	<b>Thermal Insulation for Duct</b>					
	Supply, installation, testing and commissioning of Duct insulation with following type fixed with adhesive as per manufacturers specs or using shalikote primer & hot bitumen.					
a	13mm thick Nitrile Rubber Foam	SQFT	1600			
6.2	<b>Acoustic Insulation for Duct</b>					
	Supply, installation, testing and commissioning of Acoustic lining of duct work with following type					
a	12mm thick fiberglass crown 300 stick using shalikote primer hot bitumen and mechanically fastened, covered with RP tissue and 30G aluminum perforated sheet as per specs. Acoustic lining shall be rigid board.	SQFT	200			
	<b>SUB - TOTAL (THERMAL &amp; ACOUSTIC INSULATION)</b>					
7.0	<b>ELECTRICAL WORK</b>					
7.1	<b>POWER CABLES FOR ODU</b>					
	Supply, laying, dressing, termination, testing & commissioning					
	1100 V grade, aluminium/copper conductor, PVC insulated, steel wire/strip armoured, PVC sheathed power and control cables					
	as per specs. Of following sizes, to be laid on trays including clamping, as per specs.					
	4c x 6 sqmm YRY cable (for 8 HP TO 12 HP ODU)	RMT	90			
7.2	<b>POWER CABLES FOR IDU</b>					
	Supply, laying, dressing, termination, testing & commissioning					
	1100 V grade, aluminium/copper conductor, PVC insulated, steel wire/strip armoured, PVC sheathed power and control cables					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	as per specs. Of following sizes, to be laid on trays including					
	clamping, as per specs.					
	4c x 1.5 sqmm YRY cable (for 1 HP TO 10 HP IDU)	RMT	120			
7.3	CONTROL CABLES FOR BETWEEN ODU AND IDU					
	Supply & Installation of All control cables between indoor and outdoor unit and between ODU & ODU laid in PVC pipe and clamped .					
	2c x 1.5 sqmm YRY cable	LOT	1			
7.4	CONTROL CABLES FOR BETWEEN IDU AND THEIR REMOTE					
	Supply & Installation of All control cables between indoor and their Remote laid in PVC pipe and clamped .					
	2c x 1.5 sqmm YRY cable	LOT	1			
	SUB - TOTAL (ELECTRICAL WORK)					
	<b>VENTILATION SYSTEM</b>					
<b>1.0</b>	<b>EXHAUST FANS</b>					
1.1	<b>Axial Exhaust Fan: (AS SMOKE EXTRACTION FAN)</b>					
	Supply, installation, testing and commissioning of axial exhaust air fan are					
	required to be in compliance with the requirements of <b>Class B</b>					
	performance, as defined in clause 9 of BS 7346:Part 2:1990. This					
	requires the fan to be subjected to a rated temperature of 250C for a					
	rated duration of 120 minutes.					
	with M.S floating foundations, motors, and all other accessories					
	whether specifically mentioned or not.					
	<b>Note:</b> Fan motor rpm not to exceed 600.					
	<b>Preferred Makes :</b> Kruger/Flaktwood/Airovent					
a	Air Qty : 10000 CFM (For BASEMENT 2&3)					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Static Pressure : 20 mm Wg					
	Motor : 10 kW					
	Mounting : Ceiling Suspended	NOS	8			
b	Air Qty : 11000 CFM <b>(For BASEMENT 1)</b>					
	Static Pressure : 20 mm Wg					
	Motor : 10 kW					
	Mounting : Ceiling Suspended	NOS	4			
c	Air Qty : 8500 CFM <b>(For PUMP ROOM)</b>					
	Static Pressure : 15 mm Wg					
	Motor : 4 kW					
	Mounting : Ceiling Suspended	NOS	1			
d	Air Qty : 13500 CFM <b>(For common Toilet)</b>					
	Static Pressure : 15 mm Wg					
	Motor : 6 kW					
	Mounting : Ceiling Suspended	NOS	4			
1.2	<b>Propeller Fan:</b>					
	The propeller fans for exhaust and fresh air shall be complete with speed control, louver shutter, rain protection louver, bird screen. Fans to be ring mounted on suitable frame provided by AC Contractor. Power will be provided 5 ft away from fan and <del>necessary wiring with plug will be provided by AC contractor.</del>					
a	12" dia	NOS	2			
1.3	<b>In line exhaust fan</b>					
	The inline fans shall be complete with Centrifugal fan, unit casing access door, electrical connections canopy fan shall be suitable for outdoor installation A/C contractor to include all accessories for					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	installation					
	of inline fan. Fresh air to have 6mm thick pad filter with frame.					
a	6300CFM @30 MM Static (STP )	NOS	1			
b	2700CFM @30 MM Static (Tiolet )	NOS	1			
c	1600CFM @30 MM Static (OWC )	NOS	1			
d	400CFM @30 MM Static ( Substation)	NOS	1			
	<b>SUB-TOTAL (EXHAUST FANS)</b>					
<b>2.0</b>	<b>FRESH AIR FANS</b>					
<b>2.1</b>	<b>Axial Fresh Air Fan:</b>					
	Supply, installation,testing and commissioning of Axial exhaust air					
	fan with motors, and all other accessories whether specifically mentioned					
	or not. Fans for ventilation duty shall include pre-filters on					
	M.S.framework mounted on the wall opening for fresh air intake. Filters shall be 50mm thick, and pre-filters and shall be easily removable for					
	cleaning. Filter area shall be suitable for 107 M.P.M. air velocity.					
	<b>Note:</b> Fan motor rpm not to exceed 600.					
	<b>Preferred Makes :</b> Kruger / Flaktwoods / Airovent					
a	Air Qty : 16000 CFM <b>(For BASEMENT 2&amp;3)</b>					
	Static Pressure : 25 mm Wg					
	Motor : 10 kW					
	Mounting : Ceiling Suspended	NOS	4			
b	Air Qty : 8000 CFM <b>(For BASEMENT 1)</b>					
	Static Pressure : 25 mm Wg					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Motor : 4 kW					
	Mounting : Ceiling Suspended	NOS	2			
c	Air Qty : 15000 CFM <b>(For LIFT WELL PRESSURIZATION)</b>					
	Static Pressure : 25 mm Wg					
	Motor : 7.5 kW					
	Mounting : Ceiling Suspended	NOS	1			
	<b>SUB-TOTAL (FRESH AIR FANS)</b>					
<b>3.0</b>	<b>JET FANS</b>					
3.1	<b>Jet Fans:</b>					
	Supply, installation, testing and commissioning of Jet Fans with motors,					
	and all other accessories whether specifically mentioned or not.					
	<b>Note:</b>					
	Preferred Makes : Kruger / Dynair/Flaktwood					
a	Air Qty : 1,325 CFM (Normal Mode) <b>(For Basement)</b>					
	Air Qty : 2,650 CFM (Fire Mode)					
	Motor : 0.11 KW / 0.75 kW					
	Air Throughg : 20 Meter Max.					
	Mounting : Ceiling Suspended	NOS	49			
3.2	<b>CO sensors</b>					
	Supply, installation, testing and commissioning of CO sensors with cabling and all other accessories whether specifically mentioned or not.	NOS	18			
3.3	<b>Logical Control system for Basement Ventilation:</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Supply, installation, testing and commissioning of Logical Control system					
	should be BMS Compatible.	NOS	1			
3.4	<b>CFD analyses for Basement Ventilation:</b>	LOT	1			
	<b>SUB-TOTAL (JET FANS)</b>					
<b>4.0</b>	<b>SHEET METAL WORKS</b>					
4.1	<b>GI Duct</b>					
	Fabrication, supply, installation, testing & commissioning of Galvanised					
	Iron ( GI )shall conform IS: 227 - 1977 Sheet ducting complete with					
	splitter dampers, turning vanes, access doors, supports etc. as per					
	drawings and specifications. Supports for ducts at 2.4m distance apart					
	upto 2250/1.2m distance part for larger ducts. Each support shall have					
	minimum 2 vertical rods of 10mm/12mm diameter with 40 x 40 x 6 or 50 x					
	50 x 6 angles as approved by Consultant.					
	<b>Note :</b>					
	1) All exposed ventilation duct work should be painted with 2 coats of epoxy primer and 2 coats of epoxy paint. All the supports of the duct					
	will be painted to match the ducting. Please note that the supports for ducting have to be taken from the ceiling slab only.					
	<b>2) Duct Should be Factory made</b>					
	<b>Prefered makes : (Tata, Jindal, ).</b>					
a	18 G Plenum	SQFT	50			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
b	20 G Ducting (upto 1500mm upto 2250mm any side)	SQFT	2,000			
c	22 G Ducting (above 750mm upto 1500mm anyside)	SQFT	4,500			
d	24 G Ducting (upto 750mm any side)	SQFT	15,500			
4.2	<b>Continous Linear Grilles</b>					
	Supply, installation,testing and commissioning of following sizes of Aluminium extruded powder coated continous grilles with 4 side flanges					
	<b>Note</b> : If required Contractor should blank off the extra portion of grille without additional cost and provide deflection of 0 deg to 45 deg without extra cost					
	<b>Prefered makes : (Dynacraft, Cosmos, Airproducts).</b>					
a	150mm wide	SQFT	200			
b	100mm wide	SQFT	50			
4.3	<b>Gravity louvers</b>					
	Supply, installation, testing and commissioning of Gravity louvers	SQFT	75			
4.4	<b>Fire Dampers</b>					
	<b>Prefered makes : (George Rao, Airtech, Airproducts).</b>					
	Supply, installation of fire dampers with control cabling at the unit outlet.					
	Fire dampers ( <b>Only for Fresh Air an</b> )					
a	Motorized actuators rated for fire dampers and spring return type.	SQFT	70			
4.5	<b>Volume Control Dampers for Duct</b>					
	<b>Prefered makes : (George Rao, Airtech, Airproducts).</b>					
	Supply, installation, testing and commissioning of volume control					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	dampers					
	at Machine outlet and in Branch duct. (Gear Operated and Low Leakage)	SQFT	100			
4.6	<b>Canvass Connections</b>					
	Supply, installation, testing and commissioning of Flexible double Canvass					
	Connections for FAN	NOS	77			
4.7	<b>Silencers for Fan</b>					
	Supply and installtion of Silencers for Normal mode tube axial fans	Nos	24			
	<b>SUB-TOTAL (SHEET METAL WORKS)</b>					
5.0	<b>ELECTRICAL WORK</b>					
5.1	<b>Starter Panels</b>					
	Supply, Installation, Testing and Commissioning of cubicle type fully compartmentalized totally sheet steel enclosed LT panel suitable for 415V, 50 Hz, 3 phase and 4 wire AC power supply with TPN tinned copper busbars and suitable for top cable entry, front access, dead back type and complete with feeders, metering and indications as per single line diagram and specifications enclosed:					
1	<b>For Axial Exhaust Fan (AS SMOKE EXTRACTION FAN)</b>					
a	13500 CFM	NOS	4			
b	11000 CFM	NOS	4			
c	10000 CFM	NOS	8			
d	8500 CFM	NOS				

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
			1			
2	<b>For Axial Fresh Fan</b>					
a	16000 CFM	NOS	4			
b	15000 CFM	NOS	1			
c	8000 CFM	NOS	2			
5.2	<b>Starter Panels as Control Panel For Jet Fan</b>					
	Supply, installation, testing and commissioning of Starter Panels with Electrical and PLC Panel with Modbus and should be BMS Compatible.					
a	1325 to 2650 CFM Jet Fan with 1.0 HP motor	NOS	49			
5.3	<b>Socket For Propeller Fan</b>					
	Supply, installation, testing & commissioning of Socket for Propeller with provision for terminating of incoming and outgoing	NOS	2			
	5 A, 415V					
5.4	<b>Socket For In line exhaust fan</b>					
	Supply, installation, testing & commissioning of Socket for Propeller with provision for terminating of incoming and outgoing	NOS	4			
	5 A, 415V					
5.5	<b>Power Cable For All Fan</b>					
	Supply, laying, dressing, testing and commissioning of 1100V grade,					
	aluminum/copper conductor, galvanized steel wire/strip armoured, PVC					
	sheathed power and control cables of following sizes to be laid on trays/					
	wall/racks including clamping as per					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	specifications.					
	4c x 6 sqmm YRY cable (for 15 hp to 20 hp or 11 kW to 15 kW)	RMTR	30			
	4c x 4 sqmm YRY cable (for 10 hp to 12.5 hp or 7.5 kW to 9.3kW)	RMTR	250			
	4c x 2.5 sqmm YRY cable (for 7.5 hp or 5.5 kW)	RMTR	150			
	4c x 1.5 sqmm YRY cable (for 0.5 hp to 5.0 hp or 0.37 kW to 3.7kW)	RMTR	50			
5.6	<b>Control Cables For Jet Fan</b>					
	Supply & Installation of All control cables between Jet Fan unit					
	laid in PVC pipe and clamped .					
	3c x 1.5 sqmm YRY cable	LOT	1			
	<b>SUB-TOTAL (ELECTRICAL WORK)</b>					
	<b>BMS</b>					
1.0	<b><u>C.C.T.V. SURVEILLANCE SYSTEM :</u></b>					
<b>A</b>	<b>Analog Base CCTV System</b>					
1.1	<b>Box Camera</b>					
	Supply & Installation Testing ,commissioning of item with Accessories, power conjunction box and various mounting brackets, Pole Mounting , Weather protection as per following features.					
a	<b>Aplication :</b> Outdoor					
	<b>Base:</b> Analog					
	<b>Resolution:</b>					
	HD 720P - 1 Megapixel					
	HD 1080P - 1.3 Megapixel					
	HD 1080P - 2 Megapixel					
	FULL HD - 4 Megapixel					
	ULTRA HD - 4K					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>Lens : Varifocal / Fixed</b>					
	<b>With:</b> POE (for no need of power cable)					
	<b>With:</b> Infrared IR (Day/ Night Camera)					
	<b>With:</b> <del>Analytical software control for intrusion alarm</del>					
	<b>With:</b> Color	30	Nos			
1.2	<b>Dome Cameras</b>					
	Supply & Installation Testing ,commissioning of item with Accessories, power conjunction box and various mounting brackets, Pole Mounting , Weather protection as per following features.					
b	<b>Aplication :</b> Indoor					
	<b>Base:</b> Analog					
	<b>Resolution:</b>					
	HD 720P - 1 Megapixel					
	HD 1080P - 1.3 Megapixel					
	HD 1080P - 2 Megapixel					
	FULL HD - 4 Megapixel					
	ULTRA HD - 4K					
	<b>Lens :</b> Varifocal / Fixed					
	<b>With:</b> POE (for no need of power cable)					
	<b>With:</b> Infrared IR (Day/ Night Camera)					
	<b>With:</b> <del>Analytical software control for intrusion alarm</del>					
	<b>With:</b> Color	80	Nos			
1.3	<b>DVR (Digital Video Recorder )</b>					
	Supply & Installation Testing ,commissioning of item with Accessories, as per following features.					
	<b>Recoding:</b> CIF, 2CIF, 4CIF, Up to 5 Megapixels					
	1 Sata port support upto 1 TB HDD,					
	lanport for LAN/WAN connectivity.					
	<b>Mobile device suppor:</b> No					
	<b>Remote alarm notification:</b> No					
	<b>Remote alarm notification:</b> No					
	<b>Network function for remote viewing:</b> No					
	<b>Analog video Input:</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>8- Ch</b>	0	Nos			
	<b>16- Ch</b>	0	Nos			
	<b>32- Ch</b>	4	Nos			
1.4	<b>Hard Disk</b>					
	Supply & Installation Testing ,commissioning of item with Accessories, as per following features.					
	<b>Hard Disk: (For 45 Days)</b>	2	Nos			
1.5	<b>C.C.T.V. System Softwares.</b>	0	Set			
3.8	<b>Monitors</b>					
a	<b>21" LCD</b>	0	Set			
b	<b>32" LCD</b>	8	Set			
1.6	<b>PC</b>	0	Set			
1.7	<b>Equipment Rack (In-Client Scope)</b>					
	Equipment Rack with with proper ventilated and openable doors from all sides, with casters and with cooling fans as above complete with necessary mounting hardware & accesories.					
	4 U	0	Nos			
	6 U	0	Nos			
	8 U	0	Nos			
	12 U	0	Nos			
	16 U	2	Nos			
	32 U	0	Nos			
1.8	<b>Cables</b>					
	<b>Option-1</b>					
a	<b>Video Transfer Cable</b>					
	<b>RG 6</b>					
i	RG 6 Coax Cable	0	RMT			
ii	RG 6 Coax Cable	0	Lot			
b	<b>Power Cable</b>					
	SITC Stranded Copper conductor,Type A ST1 PVC insulated,Armoured FRLS Cable 650 V as per IS 1554, with GI saddle spacers every 0.3 mtr with Single compression Cable					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Glands,ABS Junction Boxes (wherever required ), terminals,Ferruling complete. with 19mm FRLS PVC Conduit					
a	2c x1.0 mm2	1500	RMT			
b	2c x1.0 mm2	0	Lot			
		0	Lot			
	<b>Option-2</b>					
a	<b>Video Transfer Cable + Power Cable</b>					
	<b>Cat 6</b>					
i	<b>Cat - 6 /4 Pair cables (UTP).</b>	1,500	RMT			
ii	<b>Cat - 6 /4 Pair cables (UTP).</b>	0	Lot			
		0				
1.9	<b>Miscellaneous components, accessories,</b>					
	connectors, jacks etc. not indicated here.					
	but required for a complete CCTV Surveillance,					
	Video Recording and Remote Monitoring Systems.	0	Lumps um			
	(Tenderer shall list out such items with quantities)					
<b>1.0</b>	<b><u>Total - C.C.T.V. SURVEILLANCE</u></b>		-			
<b>1.0</b>	<b><u>SECURITY SYSTEM:</u></b>					
1.1	<b>Vehicle Access Control:</b>					
a	<b>AUTO SLIDING GATES</b>					
	Supply & Installation Testing ,commissioning of item with Accessories as per following features.					
i)	Type of Gate: Motorised Telescopic Sliding Gates					
	Gates Opening; 8 m					
	Gates weighing; 1200 kg					
	With Features:					
	Manual operation in case of power failure					
	Incomplete gate closing operation warning light					
	Obstacle detection causes the gate movement to stop if an obstacle is					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	detected					
	with Remote Controls	2	Nos			
	<b>Note; Door Design by Architect, Door construct not in SECURITY SYSTEM Vendor scope.</b>					
b	<b>AUTO SWING GATES</b>					
	Supply & Installation Testing ,commissioning of item with Accessories as per following features.					
	Type of Gate: Motorised Actuators					
	Gates Opening; 8 m					
	Gates weighing; 1500 kg					
	With Features:					
	Manual operation in case of power failure					
	Incomplete gate closing operation warning light					
	Obstacle detection causes the gate movement to stop if an obstacle is detected					
	with Remote Controls	2	Nos			
	<b>Note; Door Design by Architect, Door construct not in SECURITY SYSTEM Vendor scope.</b>					
c	<b>BOOM BARRIERS</b>					
	Supply & Installation Testing ,commissioning of item with Accessories as per following features.					
	<b>Boom length : 2 up to 8.4 m</b>					
	<b>Opening / Closing times max. : 4.0 sec</b>					
	<b>Hydraulic System / Electro : Mechanical</b>					
	<b>Protection Class : IP54</b>					
	Manual override in case of power failure					
	<b>Adjustable:</b> opening /closing times					
	<b>Without:</b> Boom skirt (For additional barrage below the barrier boom when the barrier is closed)					
	<b>Without:</b> Articulated Boom (For low height)					
	<b>With:</b> LED lighting (For visibility of the barrier boom)					
	<b>With:</b> Obstacle detection causes theBoom movement to stop if an					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	obstacle is detected					
	<b>With:</b> Remote Controls	4	Nos			
d	<b>ARM BARRIER K4 Rating</b>					
	Supply & Installation Testing ,commissioning of item with Accessories as per following features.					
	<b>ARM length :</b> 2-up to 8.4 m					
	<b>Opening / Closing times max. :</b> 4.0 sec					
	<b>Hydraulic System / Electro :</b> Mechanical					
	<b>Protection Class :</b> IP54					
	<b>Rating :</b> K4					
	Manual override in case of power failure					
	<b>Adjustable:</b> opening /closing times					
	<b>Without:</b> Boom skirt (For additional barrage below the barrier boom when the barrier is closed)					
	<b>Without:</b> Articulated Boom (For low height)					
	<b>With:</b> LED lighting (For visibility of the barrier boom)					
	<b>With:</b> Obstacle detection causes the Boom movement to stop if an obstacle is detected					
	<b>With:</b> Remote Controls	2	Nos			
e	<b>Tyre Killer</b>					
	Supply & Installation Testing ,commissioning of item with Accessories as per following features.					
	Tyre Killer length : 8 m					
	Blocking Width: from 2.00 m to 6.00 m					
	Blocking Height: 475 mm high	4	Nos			
	<b>Note:</b> The Tyre Killer should be integrated with sliding gate. (In case boom barrier provision is not suitable as per design intent. If boom barrier option is possible then bollard should be integrated with boom barrier & manual gate option can be looked into).					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
f	<b>Bollards</b>					
	Supply & Installation Testing ,commissioning of item with Accessories as per following features.					
	Rising: Hydraulic / Pneumatic					
	Diameter: 250mm					
	Post length: 600mm or 900mm					
	Underground length: 900mm					
	Operation time: 3~5 seconds (adjustable)					
	Working voltage: AC220V	10	Nos			
	<b>Note:</b> The bollard should be integrated with sliding gate. (In case boom barrier provision is not suitable as per design intent. If boom barrier option is possible then bollard should be integrated with boom barrier & manual gate option can be looked into).					
g	<b>Car SCAN</b>					
	Supply & Installation Testing ,commissioning of item with Accessories as per following features.					
	<b>Maximum Vehicle Speed:</b> 10mph / 16kmh					
	<b>Tunnel Inside Dimensions:</b> 2895mm (W) x 2504mm (H)					
	<b>Safety Radiation:</b> 5 µRem per scan typical / ANSI N43.17 compliant	2	Nos			
h	<b>RFID Technology for Car Access</b>					
	Supply & Installation Testing ,commissioning of item with Accessories as per following features.					
	<b>with</b> :RFID Tag + UHF Reader + Software + PC	2	Nos			
3.2	<b>Pedestrian Access Control</b>					
a	<b>X-ray Machines</b>					
i	<b>X-Ray Hand Bag Scanner</b>					
	Supply & Installation Testing ,commissioning of item with					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Accessories as per following features.					
	<b>Tunnel Dimensions:</b> 530mm (width) x 350 (height).					
	<b>Conveyor belt speed :</b> Atleast 0.23 meters per second					
	<b>Conveyor Max Load:</b> atleast 165 kg.					
	<b>Monitor:</b> 17 inch High resolution low radiation ergonomic LCD color monitor					
	<b>Color Format:</b> 5 colors or more					
	<b>Image max Resolution:</b> 1280 x1024 pixel					
	<b>Image storage:</b> 50000 image storage capacity in real time					
	<b>Zoom:</b> Atleast 32X					
	<b>Auto Center Positioning:</b> The image should automatically center itself on the screen wherever the bag is placed on the conveyor					
	<b>Backup:</b> Uninterruptable Power supply (20 mins)					
	<b>Central Monitoring:</b> Images from all the baggage scanners should be viewable in the IBMS room on a video wall.					
	<b>TIP (Threat image projection function):</b> Automatically inserts the image of hazardous material into one of the scanned object (Selectable Function). Threat Image Projection (TIP) Software: TIP software to assist supervisors in measuring the operator's effectiveness and take targeted corrective actions and training X-ray screener / operators to improve their ability in identifying specific threat object.					
	<b>Screener Assist :</b> Automatic Threat Detection Software by means of ellipses / circles / rectangles around the suspect material					
	<b>Standard Features:</b> Should have the following features - Colour /Black & White image negative ,auto Z-number measurement, Edge enhancement,geometric distortion proportion, Image retrival,					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	image review, pseudo color, reverse monochrome, organic and inorganic imaging					
	<b>Certification:</b> AERB	1	Nos			
ii	<b>X-Ray Baggage Scanner</b>					
	Supply & Installation Testing ,commissioning of item with Accessories as per following features.					
	<b>Tunnel Dimensions:</b> 1010mm (width) x 1010 (height).					
	<b>Conveyor belt speed :</b> Atleast 0.23 meters per second					
	<b>Conveyor Max Load:</b> atleast 200 kg.					
	<b>Monitor:</b> 17 inch High resolution low radiation ergonomic LCD color monitor					
	<b>Color Format:</b> 5 colors or more					
	<b>Image max Resolution:</b> 1280 x1024 pixel					
	<b>Image storage:</b> 50000 image storage capacity in real time					
	<b>Zoom:</b> Atleast 32X					
	<b>Auto Center Positioning:</b> The image should automatically center itself on the screen wherever the bag is placed on the conveyor					
	<b>Backup:</b> Uninterruptable Power supply (20 mins)					
	<b>Central Monitoring:</b> Images from all the baggage scanners should be viewable in the IBMS room on a video wall.					
	<b>TIP (Threat image projection function):</b> Automatically inserts the image of hazardous material into one of the scanned object (Selectable Function). Threat Image Projection (TIP) Software: TIP software to assist supervisors in measuring the operator's effectiveness and take targeted corrective actions and training X-ray screener / operators to improve their ability in identifying specific threat object.					
	<b>Screener Assist :</b> Automatic Threat Detection Software by means of ellipses / circles /					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	rectangles around the suspect material					
	<b>Standard Features:</b> Should have the following features - Colour /Black & White image negative ,auto Z-number measurement, Edge enhancement,geometric distortion proportion, Image retrival, image review, pseudo color, reverse monochrome, organic and inorganic imaging					
	<b>Certification:</b> AERB	1	Nos			
b	<b>Metal Detectors</b> for People					
i	<b>METAL DETECTORS FRAME TYPE / Walk-Through</b>					
	Supply & Installation Testing ,commissioning of item with Accessories as per following features.					
	<b>Environmental protection:</b> IS-200W IP 55 (EN 60529)					
	<b>Alarm :</b>					
	Audible and 6-zone visual alarm.					
	2 X 4 LED alphanumeric traffic and alarm counters: Multi-zone with LED lightbar display.					
	<b>Sensitivity:</b> 100 sensitivity steps in separate floor level adjustment.					
	<b>SAFETY :</b> International standards for human safety to electromagnetic fields. It is safe for pregnant women, people using medical implanted devices like heart pacemakers.					
	<b>Safety Standards:</b> Confirms to the applicable international standards CE, FCC for electrical safety and EMC.	2	Nos			
ii	<b>HANDLE TYPES METAL DETECTORS</b>					
	Supply & Installation Testing ,commissioning of item with Accessories as per following features.					
	Environmental protection:					
	<b>Dimensions (in mm):</b> 362(L) x 55(W) x 30(H)					
	<b>Environmental protection:</b> IP64					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>No risk to persons with pacemakers:</b> Yes					
	<b>Non-interference to magnetic media:</b> Yes					
	<b>Battery:</b> 9 volt block battery can be either replaceable 9 Volt 550mA hours or optional rechargeable NiCad 180mA hours.					
	<b>Tests &amp; approvals:</b> EEC EN5008-1 Table 1:1:1.	4	Nos			
<b>3.0</b>	<b><u>Total</u></b>		-			
<b>2.0</b>	<b><u>Access Control System:</u></b>					
	<b>Make :</b> HID / Siemens / VIRDI / Honeywell , Lenel , Cardax, DDS, ZICOM, G4S					
<b>2.1</b>	<b>Readers</b>					
a	<b>Card readers</b>					
	Supply, installation, testing & commissioning of card readers as per specification suitable for mounting on metal surface/metal frames or wooden frames wall or as required based on site conditions including all accessories					
	External control: audio/visual indication and internal LED and buzzer					
	Type: HID Proximity / HID Smart card (Mifare) / HID i-Class					
	Readers Read Range: 3"	0	Nos			
b	<b>Card + Pin readers</b>					
	Supply, installation, testing & commissioning of card readers as per specification suitable for mounting on metal surface/metal frames or wooden frames wall or as required based on site conditions including all accessories					
	External control: audio/visual indication and internal LED and buzzer					
	Type: HID Proximity / HID Smart card (Mifare) / HID i-Class					
	Readers Read Range: 3"	0	Nos			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
c	<b>Biometric + Card readers</b>					
	Supply, installation, testing & commissioning of Biometric + Card readers as per specification suitable for mounting on metal surface/metal frames or wooden frames wall or as required based on site conditions including all accessories					
	External control: audio/visual indication and internal LED and buzzer					
	Type: <del>HID Proximity / HID Smart card (Mifare)</del> / HID i-Class					
	Readers Read Range 3"	0	Nos			
d	<b>Biometric + Pin + Card readers</b>					
	Supply, installation, testing & commissioning of Biometric + Pin + Card readers as per specification suitable for mounting on metal surface/metal frames or wooden frames wall or as required based on site conditions including all accessories					
	External control: audio/visual indication and internal LED and buzzer					
	Type: <del>HID Proximity / HID Smart card (Mifare)</del> / HID i-Class					
	Readers Read Range 3"	30	Nos			
e	<b>Face Detection + Biometric + Card readers</b>					
	Supply, installation, testing & commissioning of Biometric + Pin + Card readers as per specification suitable for mounting on metal surface/metal frames or wooden frames wall or as required based on site conditions including all accessories					
	External control: audio/visual indication and internal LED and buzzer					
	Type: <del>HID Proximity / HID Smart card (Mifare)</del> / HID i-Class					
	Readers Read Range 3"	0	Nos			
2.2	<b>Exit Device</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
a.i)	<b>Panic Bar</b>					
	Supply installation, testing, commissioning of Panic Bar for fire Escape Door with local alarm	0	Nos			
b.ii)	<b>Door Ajar Sensor /Buzzer.</b>					
	Supply installation, testing, commissioning of Door Ajar Buzzer.	0	Nos			
c	<b>SS Push Button for Exit.</b>					
	Supply , installation, testing and commissioning of SS Push Button for Exit.	30	Nos			
d	<b>Emergency Break Glass Units.</b>					
	Supply installation, testing, commissioning of <b>Green</b> ABS plastic Emergency <b>Break Glass Units.</b>	30	Nos			
2.3	<b>Door Lock</b>					
i	<b>Electromagnetic Lock</b>					
	Supply, installation, testing and commissioning of electromagnetic Lock (fail safe type) of 600lb holding force for the following type doors :					
a	Double leaf Door	30	Nos			
b	Single leaf Door		Nos			
ii	<b>Electromagnetic Lock / Door Strike</b>					
	Supply installation, testing, commissioning of Magnetic Contact	60	Nos			
2.4	<b>Smart Cards</b>					
5	Supply of <b>ISO Thickness, Mifare 2K Smart Cards</b> with the possibility of printing the company details on its facia using sublimation method.					
	Type: <del>HID Proximity / HID Smart card (Mifare)</del> / HID i-Class	2000	Nos			
2.5	<b>Controller</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
i	<b>Reader / Door Controller</b>					
	Supply installation, Testing & Commissioning of 2/4 Reader Microprocessor based intelligent Access door controller with TCP/IP connectivity and required accessories, power supply unit with Battery Charger & battery back up.					
a	4 Reader	2	Nos			
b	8 Reader	0	Nos			
ii	<b>Master controller controller (not rq. In IP)</b>					
	Master controller suitable for minimum 64 Card Readers having capability of upto 128 readers linked to four Reader controller on 1 Bus, with battery backed RTC with Dual communication capability over Network	0	Nos			
2.6	<b>Access &amp; Time Attendance Reader, Controller and Software</b>					
	<b>with Features:</b>					
	<b>Standard Version Single User supports Basic Time &amp; Attendance: NO</b>					
	<b>Digital Video Management System : NO</b>					
	<b>Anti passback : NO</b>					
	<b>All standard access control, audit trails: Yes</b>					
	<b>Time &amp; attendance: NO</b>					
	<b>Alarm reports: Yes</b>					
	<b>User handing capacity: 2000</b>	1	Nos			
2.6	<b>Visitor Management System</b>					
	Supply installation, testing, commissioning of Visitor Management System with including all accessories					
	<b>with Features:</b>					
	<b>Registration</b>					
	Process most visitors in 20 seconds or less Capture visitor's photo and/or signature Scan arriving visitor's photo ID or business card					
	<b>Send invites and notifications</b>					
	<b>Video badging : Yes</b>					



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	<b>Print visitor passes:</b> Print professional color visitor passes with expiration date, visit area, host, and purpose of visit Issue Pro-Watch® access control raids	1	Nos			
2.7	<b>Access Control Database SQL Sever</b>					
	Access Control Database SQL Sever with Redundant Access Control Database SQL Sever for Automatic Change over in case failure of Main server and automatic synchronization of database ( Vendor to consider cost of redudant software , server along with all necessary hardwares, only if ACS panel has lesser memory on board for no of user & events ie 90000 card holder capacity and 90000 Transaction events)	0	Nos			
2.8	<b>Access Control software license</b>					
	Access Control software license suitable for total number of card reader indicated above with a provision of 30 % spare and future expansion capacity					
	<b>Software license: 2000 readers</b>	1	Nos			
2.9	<b>Printer</b>					
	Alarm Printer A4 Size Laser jet paper for Alarm printing	0	Nos			
2.4	<b>Cable</b>					
i	<b>Armored AB Copper flexible Cable</b>					
	Supply & Installation Testing ,commissioning of Armored AB Copper flexible Cable,PVC insulated, shielded PVC Sheathed layed with fittings & G.I Supports at 0.3mtr					
a	8 c x 0.75 Sq.mm	0	Mtrs			
b	6 c x 0.75 Sq.mm	0	Mtrs			
c	4c x 0.75 Sq.mm	0	Mtrs			
d	2c x 0.75 Sq.mm	0	Mtrs			
i	<b>Cat-6 cable</b>					
a	Cat-6 cable, laid on Surface with GI Saddle- Spacers , or in cable	0	Mtrs			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	trays, or in GI Conduits as per site requirements, with required terminations as required with Cable tie`s & Tags.					
e	All Cable	1	Lot			
	<b><u>Total of Access Control System:</u></b>		-			
5.0	FIRE ALARM SYSTEM: Make :					
	A : Bosch / Notifier (Honeywell) / Edwards (United Technologies ) / FireFinder (Siemens) / Metasys (Johnson Controls) / Simplex (Tyco)					
	B : Morley (Honeywell) / Honeywell / GST (United Technologies ) /COOPER / Cerberus (Siemens) / FIRE CLASS (Tyco)					
5.1	Main Fire Alarm Panel					
a	Conventional / Analog Fire Panel					
	SITC of Conventional / Analog Fire Alarm Panel, as per below, with a built-in 32 bit microprocessor Approvals: UL / EN / FM					
	Battery: Battery of 15 min /48 hrs backup in normal condition,+ 15 min / 1 hr backup with 25% Loop under fire condition.					
	No of zones in Panel : 4 / 6 / 8 / 12					
	No. of devices / modules connected to each zone : NA Max					
	No. of devices / modules connected to Panel: 150 / 300/500/1000 / 1500 Max + with 20% spare capacit					
	Display: Min 60 / 80 character LCD display					
	Digital Voice Evacuation System : NO					
	Integrate : NO	0	Nos			
b	Addressable Fire Alarm Panel					
	SITC of Addressable Fire Alarm Panel, as per below, Approvals: UL / EN / FM					
	"Shall support minimum Four access levels, 400 event historical logging, flash EPROM, 4 Nos. of programmable relay controls.					
	Complete with 240 volts AC PSU, automatic battery charger, 24 volts SMF batteries					
	Shall be housed in Ms Powder coated Cabinet, complete with exclusive Notification Circuits, and with Fire, Fault					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	& Auxiliary Relays."					
	Programmed: Panel shall support to programmed as a node on a peer to peer network with other Panels.					
	Battery: Battery of 15 min /48 hrs backup in normal condition,+ 15 min / 1 hr backup with 25% Loop under fire condition.					
	No of loop in Panel : 4 / 6 / 8 / 12					
	No. of devices / modules connected to each zone : maximum loading of 125 detectors and 125 devices in one loop.					
	No. of devices / modules connected to Panel: 150 / 300/500/1000 / 1500 Max + with 20% spare capacit					
	Display: Min 60 / 80 character LCD display					
	Fire Alarm Graphic software : NO					
	Printer Interface : NO					
	Firefighter Telephone Channels : NO					
	Networkable : YES					
	Digital Voice Evacuation System : YES					
	Integrate : : YES	1	Nos			
5.2	Repeater Panel					
	SITC of Addressable Fire Alarm Repeater Panel, as per below,					
	Approvals: UL / EN / FM					
	Active Repeater Panel with Microprocessor based LCD minimum 160 character display for monitoring & controlling other Panels on the network loop with Power supply. Peer To Peer Networked with all main panels, such that the status of the entire system shall be available on individual Annunciator.	1	Nos			
5.3	Accessories					
a	Fire Alarm Graphic software license					
	Fire Alarm Graphic software license suitable for total number of detectors indicated above with a provision of 30 % spare and future expansion capacity	1	Nos			
b	Fire Fighting's Addressable Telephone Handset					
	Fire Fighting's Addressable Telephone Handset	1	Nos			
c	Digital Voice Evacuation System					
	Integrated 8 channel Digital Voice Evacuation System capable to supervise all the speaker circuits, with minimum 20 zone control and accessories required to complete the system. The equipment shall be of same make as panel.	1	Set			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
d	PC					
	Fire Alarm Graphic PC as per Technical Specifications for monitoring fire detection systems	0	Nos			
e	Printer					
	Alarm Printer A4 Size lasejet paper for Alarm printing	0	Nos			
f	Operator Terminals					
	Operator Terminals for viewing the Graphics at remote location	0	Lot			
5.4	Detector					
a	Smoke Detector					
	SITC of Analogue Addressable Photoelectric type Smoke Detector, sensitivity range of 0.5% to 2.35% /ft with Detector base, complete with MS Powder coated Junction Box for Approvals: UL / EN / FM					
a.i	Mounting on Surface / Below False Ceiling	36	Nos			
a.ii	Mounting on Below False Floor.	2	Nos			
a.iii	Mounting on on above False Ceiling with Response Indicator	11	Nos			
	SITC of Response Indicator having twin LED flush mounted on false ceiling/wall	48	Nos			
b	Photoelectric + thermal Multi-sensor Detector					
	Approvals: UL / EN / FM					
	SITC of Analogue Addressable Photoelectric + thermal Multi-sensor Detector with Detector base, complete with MS Powder coated Junction Box for mounting on Surface / on False Ceiling / Below False Floor.	2	Nos			
c	Heat detector					
	Approvals: UL / EN / FM					
	SITC of Analogue Addressable Heat detector, Rate of Rise Cum Fixed temperature detector , complete with MS Powder coated Junction Box for mouting on Surface / on False Ceiling / Below False Floor.	200	Nos			
d	Reflective Type Beam detector					
	Approvals: UL / EN / FM					
	SITC of Reflective Type Beam detector,black powder coated 70mtrx5mtr	0	Nos			
5.5	Manual Call Point					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Approvals: UL / EN / FM					
	SITC of Conventional Manual Call Point In ABS Enclosure.	16	Nos			
5.6	Dual Action Manual Pull Station					
	Approvals: UL / EN / FM					
	SITC of Addressable Dual Action Manual Pull Station with Reset Lock & Key arrangement with mounting Accessories.	0	Nos			
5.7	Monitor Modules					
	Approvals: UL / EN / FM					
	SITC of Addressable Monitor Modules with MS Powder coated Housing and mounting accessories.	4	Nos			
5.8	Flow Switch					
	Addressable monitor module required to monitor status like flow Switch in Fire fighting and other applications	4	No			
5.9	Control Modules					
	Approvals: UL / EN / FM					
	SITC of Addressable Control Modules with MS Powder coated Housing and mounting accessories. Wherever Control Modules shall be used for Tripping of Third Party systems (AHUs / Electrical Breakers etc.), Pilot Relays shall be provided by the FAS vendor to route up to 240 V / 15 A current through the Pilot Relay.	4	Nos			
5.10	Hooter					
	Approvals: UL / EN / FM					
	Supply installation Testing & commissioning of Ceiling / Wall mounted Hooter cum Strobes. The Hooter cum Strobes shall be made of ABS plastic and have the Db level of 90dbs at 10ft and a multi tone facility, Strobes intensity should be 15 to 120 Candela.					
a	Ceiling mounted Hooter	16	Nos			
b	Wall mounted Hooter	4	Nos			
c	Ceiling mounted Hooter cum Strobes.	4	Nos			
d	Wall mounted Hooter cum Strobes.	4	Nos			
5.11	Fault Isolator Modules					
	Approvals: UL / EN / FM					
	SITC of Fault Isolator Modules with MS Powder coated Housing and mounting accessories.	15	Nos			
5.12	Panic Bar					
	Approvals: UL / EN / FM					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Supply installation Testing & commissioning of Panic Bar, push to open type with auxiliary PF contact, PF contact shall be connected to Annunciater panel & Local Hooter at Door.	10	Nos			
5.13	Cable					
	Make : Polycab / Finolex / Vinay					
	"Supply installation of 2 Core x 1.5 mm2, Twisted Pair , Multistranded AT Copper, FRLS Armoured cable, RED in Colour.					
	The cable shall be laid on surface with GI saddle-spacers every 0.3 meters. Complete with GI Junction Box, lugs, cable compression glands, cable tags and Ferruling."					
a	2 Core x 1.5 mm2, Multistranded	1	LOT			
b	2 Core x 1.5 mm2, Multistranded	0	Mtrs			
c	2 Core x 1.5 mm2, Twisted Pair	0	LOT			
d	2 Core x 1.5 mm2, Twisted Pair	0	Mtrs			
3.0	Total		-			
5.0	FIRE ALARM SYSTEM:					
	Make :					
	A : Bosch / Notifier (Honeywell) / Edwards (United Technologies ) / FireFinder (Siemens) / Metasys (Johnson Controls) / Simplex (Tyco)					
	B : Morley (Honeywell) / Honeywell / GST (United Technologies ) / COOPER / Cerberus (Siemens) / FIRE CLASS (Tyco)					
5.1	Main Fire Alarm Panel					
a	Conventional / Analog Fire Panel					
	SITC of Conventional / Analog Fire Alarm Panel, as per below,					
	with a built-in 32 bit microprocessor					
	Approvals: UL / EN / FM					
	Battery: Battery of 15 min /48 hrs backup in normal condition,+ 15 min / 1 hr backup with 25% Loop under fire condition.					
	No of zones in Panel : 4 / 6 / 8 / 12					
	No. of devices / modules connected to each zone : NA Max					
	No. of devices / modules connected to Panel: 150 / 300/500/1000 / 1500 Max + with 20% spare capacit					
	Display: Min 60 / 80 character LCD display					
	Digital Voice Evacuation System : NO					
	Integrate : NO	0	Nos			
b	Addressable Fire Alarm Panel					
	SITC of Addressable Fire Alarm Panel, as					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	per below,					
	Approvals: UL / EN / FM					
	"Shall support minimum Four access levels, 400 event historical logging, flash EPROM, 4 Nos. of programmable relay controls.					
	Complete with 240 volts AC PSU, automatic battery charger, 24 volts SMF batteries					
	Shall be housed in Ms Powder coated Cabinet, complete with exclusive Notification Circuits, and with Fire, Fault & Auxiliary Relays."					
	Programmed: Panel shall support to programmed as a node on a peer to peer network with other Panels.					
	Battery: Battery of 15 min /48 hrs backup in normal condition,+ 15 min / 1 hr backup with 25% Loop under fire condition.					
	No of loop in Panel : 4 / 6 / 8 / 12					
	No. of devices / modules connected to each zone : maximum loading of 125 detectors and 125 devices in one loop.					
	No. of devices / modules connected to Panel: 150 / 300/500/1000 / 1500 Max + with 20% spare capacit					
	Display: Min 60 / 80 character LCD display					
	Fire Alarm Graphic software : NO					
	Printer Interface : NO					
	Firefighter Telephone Channels : NO					
	Networkable : YES					
	Digital Voice Evacuation System : YES					
	<b>Integrate : : YES</b>	1	Nos			
5.2	<b>Repeater Panel</b>					
	SITC of Addressable Fire Alarm Repeater Panel, as per below,					
	<b>Approvals:</b> UL / EN / FM					
	Active Repeater Panel with Microprocessor based LCD <del>minimum 160 character</del> display for monitoring & controlling other Panels on the network loop with Power supply. Peer To Peer Networked with all main panels, such that the status of the entire system shall be available on individual Annunciator.	1	Nos			
5.3	<b>Accessories</b>					
a	<b>Fire Alarm Graphic software license</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Fire Alarm Graphic software license suitable for total number of detectors indicated above with a provision of 30 % spare and future expansion capacity	1	Nos			
<b>b</b>	<b>Fire Fighting's Addressable Telephone Handset</b>					
	Fire Fighting's Addressable Telephone Handset	1	Nos			
<b>c</b>	<b>Digital Voice Evacuation System</b>					
	Integrated 8 channel Digital Voice Evacuation System capable to supervise all the speaker circuits, with minimum 20 zone control and accessories required to complete the system. The equipment shall be of same make as panel.	1	Set			
<b>d</b>	<b>PC</b>					
	Fire Alarm Graphic PC as per Technical Specifications for monitoring fire detection systems	0	Nos			
<b>e</b>	<b>Printer</b>					
	Alarm Printer A4 Size lasejet paper for Alarm printing	0	Nos			
<b>f</b>	<b>Operator Terminals</b>					
	Operator Terminals for viewing the Graphics at remote location	0	Lot			
<b>5.4</b>	<b>Detector</b>					
<b>a</b>	<b>Smoke Detector</b>					
	SITC of Analogue Addressable Photoelectric type Smoke Detector, sensitivity range of 0.5% to 2.35% /ft with Detector base, complete with MS Powder coated Junction Box for					
	<b>Approvals: UL / EN / FM</b>					
a.i	Mounting on Surface / Below False Ceiling	36	Nos			
a.ii	Mounting on Below False Floor.	2	Nos			
a.iii	Mounting on on above False Ceiling	11	Nos			
	<b>with Response Indicator</b>					
	SITC of Response Indicator having twin LED flush mounted on false	48	Nos			



Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	ceiling/wall					
b	<b>Photoelectric + thermal Multi-sensor Detector</b> <b>Approvals: UL / EN / FM</b>					
	SITC of Analogue Addressable Photoelectric + thermal Multi-sensor Detector with Detector base, complete with MS Powder coated Junction Box for mounting on Surface / on False Ceiling / Below False Floor.	2	Nos			
c	<b>Heat detector</b> <b>Approvals: UL / EN / FM</b>					
	SITC of Analogue Addressable Heat detector, Rate of Rise Cum Fixed temperature detector , complete with MS Powder coated Junction Box for mouting on Surface / on False Ceiling / Below False Floor.	200	Nos			
d	<b>Reflective Type Beam detector</b> <b>Approvals: UL / EN / FM</b>					
	SITC of Reflective Type Beam detector,black powder coated 70mtrx5mtr	0	Nos			
5.5	<b>Manual Call Point</b> <b>Approvals: UL / EN / FM</b>					
	SITC of Conventional Manual Call Point In ABS Enclosure.	16	Nos			
5.6	<b>Dual Action Manual Pull Station</b> <b>Approvals: UL / EN / FM</b>					
	SITC of Addressable Dual Action Manual Pull Station with Reset Lock & Key arrangement with mounting Accessories.	0	Nos			
5.7	<b>Monitor Modules</b> <b>Approvals: UL / EN / FM</b>					
	SITC of Addressable Monitor Modules with MS Powder coated Housing and mounting accessories.	4	Nos			
5.8	<b>Flow Switch</b>					
	Addressable monitor module required to monitor status like flow	4	No			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Switch in Fire fighting and other applications					
5.9	<b>Control Modules</b>					
	<b>Approvals:</b> UL / EN / FM					
	SITC of Addressable Control Modules with MS Powder coated Housing and mounting accessories. Wherever Control Modules shall be used for Tripping of Third Party systems (AHUs / Electrical Breakers etc.), Pilot Relays shall be provided by the FAS vendor to route up to 240 V / 15 A current through the Pilot Relay.	4	Nos			
5.10	<b>Hooter</b>					
	<b>Approvals:</b> UL / EN / FM					
	Supply installation Testing & commissioning of Ceiling / Wall mounted Hooter cum Strobes. The Hooter cum Strobes shall be made of ABS plastic and have the Db level of 90dbs at 10ft and a multi tone facility, Strobes intensity should be 15 to 120 Candela.					
a	Ceiling mounted Hooter	16	Nos			
b	Wall mounted Hooter	4	Nos			
c	Ceiling mounted Hooter cum Strobes.	4	Nos			
d	Wall mounted Hooter cum Strobes.	4	Nos			
5.11	<b>Fault Isolator Modules</b>					
	<b>Approvals:</b> UL / EN / FM					
	SITC of Fault Isolator Modules with MS Powder coated Housing and mounting accessories.	15	Nos			
5.12	<b>Panic Bar</b>					
	<b>Approvals:</b> UL / EN / FM					
	Supply installation Testing & commissioning of Panic Bar, push to open type with auxiliary PF contact, PF contact shall be connected to Annunciater panel & Local Hooter at Door.	10	Nos			
5.13	<b>Cable</b>					
	<b>Make : Polycab / Finolex / Vinay</b>					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	Supply installation of 2 Core x 1.5 mm <sup>2</sup> , Twisted Pair , Multistranded AT Copper, FRLS Armoured cable, <b>RED in Colour.</b> The cable shall be laid on surface with GI saddle-spacers every 0.3 meters. Complete with GI Junction Box, lugs, cable compression glands, cable tags and Ferruling.					
a	2 Core x 1.5 mm <sup>2</sup> , Multistranded	1	LOT			
b	2 Core x 1.5 mm <sup>2</sup> , Multistranded	0	Mtrs			
c	2 Core x 1.5 mm <sup>2</sup> , Twisted Pair	0	LOT			
d	2 Core x 1.5 mm <sup>2</sup> , Twisted Pair	0	Mtrs			
<b>3.0</b>	<b><u>Total</u></b>		-			
<b>6.0</b>	<b><u>PUBLIC ADDRESS SYSTEM:</u></b> <b>Make : Bosch / Other</b>					
	<b>Note</b>					
	Supply, Installation, Testing and Commissioning of the following Public Address Systems as per detailed Technical Specifications and directions of engineer in charge.					
1.1	<b>All-In-One (Amplifier + DVD/CD player + other)</b>					
	SITC of All-In-One (Amplifier + DVD/CD player + other) with all requisite accessories.					
	<u>Inputs</u>					
	Multiple Microphone / Line Telephone					
	Call station					
	Booster Amplifiers.					
	<u>Outputs</u>					
	1 and 2 Zone models					
	music					
	announcement					
	<u>Amplifier Watt</u>					
	60W	0	Nos			
	120W	0	Nos			
	240W	0	Nos			
	350W	0	Nos			
	400W	4	Nos			
	800 W	0	Nos			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
1.2	<b>Preamplifier</b>					
	SITC of Preamplifier with					
	<u>Inputs</u>					
	Multiple Microphone / Line					
	3 music source					
	Booster Amplifiers.					
	Detachable labels					
	Telephone and call station					
	Voice activated emergency					
	override					
	<u>Outputs</u>					
	1 and 2 Zone models					
	music					
	announcement					
	<u>Watt</u>					
	30W / 60W / 120W / 180W / 240W	2	Nos			
	350W / 480W					
1.3	<b>Booster Amplifier</b>					
	SITC of Booster Amplifier, Shall be					
	connected to existing pre-amplifier.					
a	120 Watt	0	Nos			
b	240 Watt	0	Nos			
c	480 Watt	2	Nos			
d	1000 Watt	0	Nos			
1.4	<b>Multiple Microphone / Line Telephone</b>					
	SITC of Multiple Microphone / Line	0	Nos			
	Telephone					
1.5	<b>Call Station / Paging Microphone</b>					
	SITC of Call Station With					
	The announcement console shall					
	be designed for zone wise					
	announcement from single					
	location. Vendor shall calculate					
	related controller, router, call					
	station and keypad.					
a	For 1 Zone	1	Nos			
b	For 2 Zone	2	Nos			
1.6	<b>Emergency Evacuation Voice Alarm System</b>					
	SITC of Call Station With					
a	1 Zone	0	Nos			
b	2 Zone	2	Nos			
c	25 Zone	0	Nos			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
d	60 Zone	0	Nos			
1.7	<b>CD changer (DVD/CD-Player)</b>					
	SITC of CD changer for playback of background music					
a	CD changer 1 CD	0	No.			
b	CD changer 3 CD	0	No.			
1.8	<b>Speaker</b>					
	SITC of speaker with all requisite mouting accessories to mount the speaker on False Ceiling / True Ceiling.					
a	4 Watts for False Ceiling	0	Nos			
b	6 Watts for False Ceiling	0	Nos			
c	4 watt Box type speaker, Back Box shall be powder coated.	180	Nos			
d	6 watt Box type speaker, Back Box shall be powder coated.	60	Nos			
e	12 watt Box type speaker, Back Box shall be powder coated.	5	Nos			
1.9	<b>Volume Control</b>					
	SITC of Volume Control, Shall capable to override incase of fire Emergency.					
a	12 Watt	1	Nos			
b	36 Watt	1	Nos			
c	100 Watt	2	Nos			
1.1	<b>Two way selector switch</b>					
	Two way selector switch	0	Nos			
1.11	<b>Equipment Rack (In-Client Scope)</b>					
	Equipment Rack with standardized frame or enclosure for mounting multiple PA controllers, CD player, FM sources, Amplifiers etc modules, shall have Lockable doors, with proper ventilated and openable doors from all sides, with casters and with cooling fans as above complete with necessary mounting hardware & accesories.					
	4 U	0	Nos			
	6 U	0	Nos			
	8 U	0	Nos			
	12 U	0	Nos			
	16 U	0	Nos			
	32 U	2	Nos			

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
1.11	<b>Cable</b>					
	<b>Make : Polycab / Finolex / Vinay</b>					
i	<b>Armoured Cable</b>					
	SITC of ISI Marked 2core x 1.5 mm <sup>2</sup> , Multistranded Copper Conductor, Armoured FRLS Cable 650 V as per IS 1554, in <b>Black</b> in colour complete with Saddle Supports every 0.3 meters, ABS Junction Boxes (wherever required ), terminals, Ferruling , fittings and accessories.					
a	2 Core x 1.5 mm <sup>2</sup> , Multistranded	0	LOT			
b	2 Core x 1.5 mm <sup>2</sup> , Multistranded	3750	Mtrs			
ii	<b>Cable + PVC Conduit</b>					
	SITC of twin twisted Cable multi-stranded shielded Insulated Straight FRLS Cable with Saddle Supports every 0.3 meters, fittings and accessories.					
	with 19mm FRLS PVC Conduit					
a	2c x 24/0.2mm (for 4 Watt speaker)	0	LOT			
b	2c x 24/0.2mm (for 4 Watt speaker)	0	Mtrs			
c	2c x 40/0.2mm (for 8 Watt speaker)	0	LOT			
d	2c x 40/0.2mm (for 8 Watt speaker)	0	Mtrs			
e	2 PAIR x 0.5 mm <sup>2</sup>	0	Mtrs			
e	2 PAIR x 1.5 mm <sup>2</sup>	0	Mtrs			
iii	<b>CAT 5 or CAT 6 Cable</b>					
	SITC of CAT 5 or CAT 6 Cable for communication					
a	CAT 5 or CAT 6 Cable	0	LOT			
b	CAT 5 or CAT 6 Cable	3750	Mtrs			
	<b>Total</b>	7,764	-			
	<b>STACK PARKING</b>					
	TECHNICAL DATA					
	Parklift411/440					
	Hold to run operations					
	Dependent / independent / indoor /powder coated /galvanized					
	WOHR std colour pebble grey					

Sl. No.	Description of Item	Quantity may be more or less	Unit	Rate		Amount
				In Figure	In Words	
1	2	3	4	5	6	7
	2.0 ton					
	Electromagnetic locks lockers from top to bottom at every 1000mm to ensure maximum safety					
	Emergency stop switch & hydraulic non return valve					
	WOHR standard corrugated design in galvenised					
	Wohr parlift 411 Ground level Galvenized	18	Nos.			
	Wohr parlift 440 Basement 3 level Powder coated	20	Nos.			
	<b>TOTAL OF STACK PARKING</b>					
	<b>ELEVATORS</b>					
	Gearless with machine room 16 stops 1.75 m/s power door	4	Nos.			
	<b>TOTAL OF ELEVATORS</b>					

- Item for which no rate or price has been entered in will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the bill of quantities (Refer: ITB Clause 13.2 and GCC Clause 43.3)
- Unit rates and prices shall be quoted by the bidder in Indian rupee [ITB Clause 14.1]
- Where there is a discrepancy between the rate in figure and words, the rates in word will govern [ITB Clause 27.1(a)]
- Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by quantity, the unit rate quoted shall govern [ITB Clause 27.1(b)]

### SPECIFICATIONS

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
1	Item No.1: Providing and casting Ready Mix M-30 grade cement concrete for reinforced cement concrete work of cast in situ bored piles 475 mm diameter using cement content as per approved design mix, including pumping of concrete to site of laying and the cost of centering, shuttering, finishing and excluding reinforcement, including admixtures in recommended proportions as per IS:9103 to accelerate, retard setting of concrete. Improve workability without impairing strength and durability as per direction of Engineer – in – charge. The mix design as per particular specification shall be got approved by Engineer – in – charge before execution of item. The rate shall include cost of all specified materials and operation at all levels and heights, including the cost of centering, steel/waterproof plywood shuttering and excluding reinforcement which shall be paid under relevant item.( Note:- minimum Cement content	As per rotary method	( Note:- minimum Cement content considered in this item is @ 400 kg/cum as per IS 455 table showing minimum cement content. No extra charges will be paid on account of variation of cement in mix design as per specifications for controlled concrete i.e. beyond 400kg/cum)

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
	considered in this item is @ 400 kg/cum as per IS 455 table showing minimum cement content. No extra charges will be paid on account of variation of cement in mix design as per specifications for controlled concrete i.e.beyond 400kg/cum) (As per rotary Method)		
2	Item No.2: Providing and casting Ready Mix M-30 grade cement concrete for reinforced cement concrete work,of cast in situ bored piles 600 mm diameter using cement content as per approved design mix, including pumping of concrete to site of laying and the cost of centering, shuttering, finishing and excluding reinforcement, including admixtures in recommended proportions as per IS:9103 to accelerate, retard setting of concrete. Improve workability without impairing strength and durability as per direction of Engineer – in – charge. The mix design as per particular specification shall be got approved by Engineer – in – charge before execution of item. The rate shall include cost of all specified materials and operation at all levels and heights, including the cost of centering, steel/waterproof plywood shuttering and excluding reinforcement which shall be paid under relevant item.( Note:- minimum Cement content considered in this item is @ 400 kg/cum as per IS 455 table showing minimum cement content. No extra charges will be paid on account of variation of cement in mix design as per specifications for controlled concrete i.e. beyond 400kg/cum) (As per rotary Method)	As per rotary method	( Note:- minimum Cement content considered in this item is @ 400 kg/cum as per IS 455 table showing minimum cement content. No extra charges will be paid on account of variation of cement in mix design as per specifications for controlled concrete i.e. beyond 400kg/cum)
3	Item No.3: Providing and casting Ready Mix M-30 grade cement concrete for reinforced cement concrete work of cast in situ bored piles 750 mm diameter using cement content as per approved design mix, including pumping of concrete to site of laying and the cost of centering, shuttering, finishing and excluding reinforcement, including admixtures in recommended proportions as per IS:9103 to accelerate, retard setting of concrete. Improve workability without impairing strength and durability as per direction of Engineer – in – charge. The mix design as per particular specification shall be got approved by Engineer – in – charge before execution of item. The rate shall include cost of all specified materials and operation at all levels and heights, including the cost of centering, steel/waterproof plywood shuttering and excluding reinforcement which shall be paid under relevant item.( Note:- minimum Cement content considered in this item is @ 400 kg/cum as per IS 455 table showing minimum cement content. No extra charges will be paid on account of variation of cement in mix design as per specifications for controlled concrete i.e. beyond 400kg/cum) (As per rotary Method)	As per rotary method	( Note:- minimum Cement content considered in this item is @ 400 kg/cum as per IS 455 table showing minimum cement content. No extra charges will be paid on account of variation of cement in mix design as per specifications for controlled concrete i.e. beyond 400kg/cum)
4	Item No.4:- Providing placing and Driving in position mild steel liner for R.C.C. Piles 6 millimeter thick permanent mild steel		The work shall be carried out as per the wording of



Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
	upto required depth with 12mm thick mild steel cutting edge of 0.50m length at bottom including fabricating cutting the mild steel sheet to required diameter and shape ,welding the joints and driving with the help of required machineries including all materials labours and lifts etc. complete as directed by the Engineer in charge.(b) From 3.00 to 9.50m deep liner.		item and as directed by Engr. incharge.
5	Item No. 5: Chiseling through pile shell in hard strata like boulders , soft and hard rocks Up to inclusive of 550 mm diametre Including removing and stacking the loose materials etc. complete and disposing of the unserviceable materials out side complete.	Bd/B-2 P-269	
6	Item No. 6 : Chiselling through pile shell in hard strata like boulders , soft and hard rocks Beyond 550mm and up to and inclusive of 750 mm dia Including removing and stacking the loose materials etc. complete and disposing of the unserviceable materials out side complete.	Bd/B-2 P-269	
7	Item No 7:- Empty boring for 425 to 500mm Dia bored R.C.C. cast in situ piles including withdrawal of shell, removal of earth to a distance of 50 metres etc. complete. (As per rotary Method)	Bd/B-2 P-269	
8	Item No 8:- Empty boring for 525 to 600 mm dia bored R.C.C. cast in situ piles including withdrawal of shell, removal of earth to a distance of 50 metres etc. complete. (As per rotary Method)	As per rotary method	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
9	Item No 9:- Empty boring for 725 to 1050 mm dia bored R.C.C. cast in situ piles including withdrawal of shell, removal of earth to a distance of 50 metres etc. complete. (As per rotary Method)	As per rotary method	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
10	Item No. 10: Providing bentonite slurry process for various diameter of piles vide Item Nos 1 (i to xxiv) above.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
11	Item No.11:- Chipping and dressing of the R.C.C. piles upto 0.60 meter including cleaning reinforcement and removal of dismantled materials upto a distance of 50 meter beyond the building area etc. for providing pile caps.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
12	Item No.12 :- Carrying out load test for 1.5 times the proposed safe working load on the pile in driven position 475mm Dia Pile including construction of test cap, use of accessories and instruments including providing graphs as per I.S. code or Std. Specifications and dismantling the test cap after testing and cleaning the site complete.	Bd/B-8 P-271	
13	Item No.13 :- Carrying out load test for 1.5 times the proposed safe working load on the pile in driven position 600mm Dia Pile including construction of test cap, use of accessories and instruments including providing graphs as per I.S. code or Std. Specifications and dismantling the test cap after testing and cleaning the site complete.	Bd/B-8 P-271	
14	Item No.14 :- Carrying out load test for 1.5 times the proposed safe working load on the pile in driven position 750mm Dia Pile including construction of test cap, use of accessories and instruments including providing graphs as per I.S. code or Std. Specifications and dismantling the test cap after testing and	Bd/B-8 P-271	

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
	cleaning the site complete.		
15	Item No.15 :- Pile integrated test Conducting pile integrity test as per IS 14893 and submitting reports and graphs including all necessary preparation for the test etc. complete (475mm Dia Pile)	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
16	Item No.16 :- Pile integrated test Conducting pile integrity test as per IS 14893 and submitting reports and graphs including all necessary preparation for the test etc. complete (600mm Dia Pile)	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
17	Item No.17 :- Pile integrated test Conducting pile integrity test as per IS 14893 and submitting reports and graphs including all necessary preparation for the test etc. complete (750mm Dia Pile )	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
18	Item No.18 :- Excavation for foundation in earth, soil of all types, sand, gravel and soft murum. including removing the excavated materials up to a distance of 50 metres beyond the building area and lift upto 1.50 metres, stacking and spreading as directed including dewatering unless provided elsewhere, preparing the bed for the foundation and necessary backfilling, ramming, watering complete excluding shoring and strutting.	Bd/A-1 P-259	
19	Item No.19 :-Excavation for foundation in earth, soil of all types, sand, gravel and soft murum. including removing the excavated materials up to a distance of 50 metres beyond the building area, stacking and spreading as directed including dewatering manually, preparing the bed for the foundation and necessary backfilling, ramming, watering complete excluding shoring and strutting. (Add for every additional vertical lift of 1.50 metres) For lift above 1.5m to 3.00m	Bd/A-1 P-259	
20	Item No.20 :-Excavation for foundation in earth, soil of all types, sand, gravel and soft murum. including removing the excavated materials up to a distance of 50 metres beyond the building area, stacking and spreading as directed including dewatering manually, preparing the bed for the foundation and necessary backfilling, ramming, watering complete excluding shoring and strutting. (Add for every additional vertical lift of 1.50 metres) For lift above 3.0m to 4.5m	Bd/A-1 P-259	
21	Item No.21 :-Excavation for foundation in earth, soil of all types, sand, gravel and soft murum. including removing the excavated materials up to a distance of 50 metres beyond the building area, stacking and spreading as directed including dewatering manually, preparing the bed for the foundation and necessary backfilling, ramming, watering complete excluding shoring and strutting. (Add for every additional vertical lift of 1.50 metres) For lift above 4.5m to 6m	Bd/A-1 P-259	
22	Item No.22 :-Excavation for foundation in earth, soil of all types, sand, gravel and soft murum. including removing the excavated materials up to a distance of 50 metres beyond the building area, stacking and spreading as directed including dewatering manually, preparing the bed for the foundation and necessary backfilling, ramming, watering complete excluding shoring and strutting. (Add for every additional vertical lift of 1.50 metres) For lift above 6.00m to 7.5m	Bd/A-1 P-259	
23	Item No.23 :-Excavation for foundation in earth, soil of all types, sand, gravel and soft murum. including removing the excavated materials up to a distance of 50 metres beyond the	Bd/A-1 P-259	

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
	building area, stacking and spreading as directed including dewatering manually, preparing the bed for the foundation and necessary backfilling, ramming, watering complete excluding shoring and strutting. (Add for every additional vertical lift of 1.50 metres) For lift above 7.5M to 9.00		
24	Item No.24:- Dewatering the excavated trenches and pools of water in the building area by using pumps and other devices, including disposing of the water to a safe distance as directed.By using 5 to 9 H.P. Pumps	Bd/A-9 P-261	
25	Item No.25:- Dewatering the excavated trenches and pools of water in the building area by using pumps and other devices, including disposing of the water to a safe distance as directed.By using 10 to 19 H.P. Pump	Bd/A-9 P-261	
26	Item No 26:Providing dry trap / rubble stone soling 15 cm to 20 cm thick including hand packing and compacting etc. complete.	Bd/A-12 P-264	
27	Item No.27:- Providing & laying in position ready mix (RMC) plain M-20 grade cement concrete using trap metal, River sand and cement as per approved mix design based on guidelines given in IS 456:2000 for foundation and bedding, the item inclusive of admixtures of approved manufacturing company required during the period of transportation to maintain the workability of concrete. The ready mix concrete required for approved grade should be from L&T, Ambuja, ultratech RMC Plant which is certified / approved by the Engineer-in-charge. The RMC concrete should be manufacture in fully automatic batching plant and transported to site of work in transit mixer for all leads having continuous agitated mixer including admixtures to accelerate, retard setting of concrete to improve the workability impairing strength and durability. The item includes pumping of RMC from transit to site of laying includes bailing out water manually centering, shuttering, compacting by vibrator and curing etc. complete. (Excluding reinforcement).	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
28	Item No. 28:-Providing and casting in situ dense and impervious cement concrete. M30 of trap metal for R.C.C. pile caps as per detailed designs and drawings including bailing out water manually, including, providing and erecting steel centering and shuttering with strutting, propping etc. complete and removal of formwork, necessary compacting finishing and curing. Only steel centering and formwork is to be used and no deviation is allowed.	Bd/F-1 P-297	
29	Item No.29:- Providing and applying approved quality coal tar epoxy paint in three coats of well, pier abutment between L.T.L. to 0.90 metre H.F.L. above including cleaning surface, scaffolding etc. complete.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
30	Item No. 30:-Providing and laying in position ready mix design mix M -30 grade cement concrete for reinforced cement concrete work, in foundation like raft, strip, grillage foundation and footing of R.C.C. Columns and steel stanchions including bailing out water manually including providing and erecting steel Centering and shuttering with strutting, propping etc, by pumping and removal of formwork, necessary compaction, roughening the surface if special finish is to be providedand curing. (Excluding steel reinforcement)	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
31	Item No. 31 : Providing and laying in position ready mix M -30 grade cement concrete for reinforced cement concrete work for R.C.C. Pardi of 30 mm thickas per detailed designs and drawings or as directed including providing and erecting steel Centering and shuttering with strutting, propping etc, by pumping and removal of formwork, necessary compaction, roughening the surface if special finish is to be providedand curing. (Excluding steel reinforcement)	BD/ F-10 P-304 ( Except thickness)	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
32	Item No. 32 : Providing and laying in position ready mix M -30 grade cement concrete for reinforced cement concrete work for R.C.C. Pardi of 15 mm thickas per detailed designs and drawings or as directed including providing and erecting steel Centering and shuttering with strutting, propping etc, by pumping and removal of formwork, necessary compaction, roughening the surface if special finish is to be provided and curing. (Excluding steel reinforcement)	BD/ F-10 P-304 ( Except thickness)	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
33	Item No. 33 :- Providing and laying in position ready mix design mix M -30 grade Cement Concrete with min. cement content 400 kg/ cum for R.C.C. Column as per detailed designs and drawings or as directed including providing and erecting steel Centering and shuttering with strutting, propping etc, by pumping and removal of formwork, necessary compaction, roughening the surface if special finish is to be provided and curing inclusive of all leads and lifts etc. complete. (Excluding steel reinforcement)	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
34	Item No.34 :-Providing Pre-constructional Anti termite as per IS: 6313 ( Par III) by treating the bottom surface, the sides of excavation, backfill in immediate contact with foundation, treating the top surface of plinth filling at the rate of 5.00 liters of emulsion concentrate of 0.5% of chloropyrifos or equivalent per square metre of surface area covering 10 year's guarantee.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
35	Item No. 35 :- Providing and laying in position ready mix design mix M -30 grade cement concrete with min. cement content 400 kg/ cum for R.C.C.Beams and Lintels as per detailed designs and drawings or as directed including providing and erecting steel Centering and shuttering with strutting, propping etc, by pumping and removal of formwork, necessary compaction, roughening the surface if special finish is to be providedand curing. (Excluding steel reinforcement) inclusive of all leads and lifts.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
36	Item No. 36 :- Filling in plinth and floors with contractor's murum in 15 cm to 20 cm layers including watering, compaction etc. complete.	Bd/A-11 P-263	
37	Item No. 37 :-Providing and laying in position ready mix design mix M -30 grade Cement concrete with min. cement content 400 kg/ cum for R.C.C.Slabs and Landing Above 15cm thickness as per detailed designs and drawings or as directed including providing and erecting steel Centering and shuttering with strutting, propping etc, by pumping and removal of formwork, necessary compaction, roughening the surface if special finish is to be providedand curing. inclusive of all leads and lifts etc. complete (Excluding steel reinforcement)	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
38	Item No. 38 :-Providing and laying in position ready mix design mix M -30 grade Cement concrete with min. cement content 400 kg/ cum for R.C.C.Slabs and Landing above 12.5cm to 15cm thickness as per detailed designs and drawings or as directed including providing and erecting steel Centering and shuttering with strutting, propping etc, by pumping and removal of formwork, necessary compaction, roughening the surface if special finish is to be providedand curing. inclusive of all leads and lifts etc. complete (Excluding steel reinforcement)	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
39	Item No. 39 :-Providing and laying in position ready mix design mix M -30 grade with min. cement content 400 kg/ cum for R.C.C. Chajjas as per detailed designs and drawings or as directed including providing and erecting steel Centering and shuttering with strutting, propping etc, by pumping and removal of formwork, necessary compaction, roughening the surface if special finish is to be providedand curing. inclusive of all leads and lifts etc complete (Excluding steel reinforcement)	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
40	Item No. 40 : Providing and laying in position ready mix design mix M -30 grade with min. cement content 400 kg/ cum for R.C.C. Canopy as per detailed designs and drawings or as directed including providing and erecting steel Centering and shuttering with strutting, propping etc, by pumping and removal of formwork, necessary compaction, roughening the surface if special finish is to be providedand curing. inclusive of all leads and lifts etc complete (Excluding steel reinforcement)	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
41	Item No. 41:-Providing and laying in position ready mix design mix M -30 grade with min. cement content 400 kg/ cum for R.C.C. Waist slab and steps as per detailed designs and drawings or as directed including providing and erecting steel Centering and shuttering with strutting, propping etc, by pumping and removal of formwork, necessary compaction, roughening the surface if special finish is to be providedand curing. (Excluding steel reinforcement) inclusive of all leads and lifts.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
42	<b>Item No. 42:</b> Providing and fixing in position steel bar TMT steel reinforcement of various diameters for R.C.C. pile caps, footings, foundations, slabs, beams, columns, canopies, staircases, newels, chajjas, lintels, pardies, coping, fins, arches, etc. as per detailed designs, drawings and schedules, including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required etc. complete.	Bd/F-17 P-306	
43	Item No. 43 :-Providing Fusion Bonded Epoxy Coating (FBEC) to reinforced bars of 8 mm dia as per IS: 13620-1993 specifications for a thickness of 175 micron Permissibnle variation of 50 micron including testing of coating at plant extra cost for careful handing using PVC coating, binding wires instead of G.I. wires to and from platn touching up the material supplied repari work etc complete as per detailed specifications. inclusive of all leads and lifts etc complete (Lead 200 Km. from Plant)	MORT & H-1600 Edition 2001	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
44	Item No. 44 :-Providing Fusion Bonded Epoxy Coating (FBEC) to reinforced bars of 10 mm dia as per IS: 13620-1993 specifications for a thickness of 175 micron Permissibnle variation of 50 micron including testing of coating at plant extra	MORT & H-1600 Edition 2001	The work shall be carried out as per the wording of item and as directed by Engr. incharge.

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
	cost for careful handling using PVC coating, binding wires instead of G.I. wires to and from platn touching up the material supplied repari work etc complete as per detailed specifications. inclusive of all leads and lifts etc complete (Lead 200 Km. from Plant)		
45	Item No. 45 :-Providing Fusion Bonded Epoxy Coating (FBEC) to reindorced bars of 12 mm dia as per IS: 13620-1993 specifications for a thickness of 175 micron Permissibnle variation of 50 micron including testing of coating at plant extra cost for careful handling using PVC coating, binding wires instead of G.I. wires to and from platn touching up the material supplied repari work etc complete as per detailed specifications. inclusive of all leads and lifts etc complete (Lead 200 Km. from Plant)	MORT & H-1600 Edition 2001	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
46	Item No. 46 :-Providing Fusion Bonded Epoxy Coating (FBEC) to reindorced bars of 16 mm dia as per IS: 13620-1993 specifications for a thickness of 175 micron Permissibnle variation of 50 micron including testing of coating at plant extra cost for careful handling using PVC coating, binding wires instead of G.I. wires to and from platn touching up the material supplied repari work etc complete as per detailed specifications. inclusive of all leads and lifts etc complete (Lead 200 Km. from Plant)	MORT & H-1600 Edition 2001	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
47	Item No. 47 :-Providing Fusion Bonded Epoxy Coating (FBEC) to reindorced bars of 20 mm dia as per IS: 13620-1993 specifications for a thickness of 175 micron Permissibnle variation of 50 micron including testing of coating at plant extra cost for careful handling using PVC coating, binding wires instead of G.I. wires to and from platn touching up the material supplied repari work etc complete as per detailed specifications. inclusive of all leads and lifts etc complete (Lead 200 Km. from Plant)	MORT & H-1600 Edition 2001	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
48	Item No. 48 :-Providing Fusion Bonded Epoxy Coating (FBEC) to reindorced bars of 25 mm dia as per IS: 13620-1993 specifications for a thickness of 175 micron Permissibnle variation of 50 micron including testing of coating at plant extra cost for careful handling using PVC coating, binding wires instead of G.I. wires to and from platn touching up the material supplied repari work etc complete as per detailed specifications. inclusive of all leads and lifts etc complete (Lead 200 Km. from Plant)	MORT & H-1600 Edition 2001	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
49	Item No. 49 :-Providing Fusion Bonded Epoxy Coating (FBEC) to reindorced bars of 32 mm dia as per IS: 13620-1993 specifications for a thickness of 175 micron Permissibnle variation of 50 micron including testing of coating at plant extra cost for careful handling using PVC coating, binding wires instead of G.I. wires to and from platn touching up the material supplied repari work etc complete as per detailed specifications. inclusive of all leads and lifts etc complete (Lead 200 Km. from Plant)		
50	Item No. 50 :- Providing autoclaved cellular concrete block masonry confirming to IS 2185 (Part-3) of size 200 X 240 X 650 mm in cement mortar 1:4 in superstructure, including bailing out water manually, skirting joints on unexposed faces, racking out joints on exposed faces and watering etc. complete.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
51	Item No. 51 :- Providing autoclaved cellular concrete block masonry confirming to IS 2185 (Part-3) of size 650 X100 X 240mm in cement mortar 1:4 in superstructure, including bailing	-----	The work shall be carried out as per the wording of item and as directed by

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
	out water manually, skirting joints on unexposed faces, racking out joints on exposed faces and watering etc. complete.		Engr. incharge.
52	<b>Item No. 52</b> :-Providing and fixing country cut teak wood. door frame as per drawing for second class doors without ventilators, windows, fanlights etc., including all mouldings, rebating, holdfast and finishing with one coat of primer etc. complete.	Bd/T-2 P-478	
53	<b>Item No. 53</b> : .Providing 6 mm thick P.O.P. finish in single coat to concrete or brick surfaces in all positions including scaffolding etc. complete.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
54	<b>Item No. 54</b> : .Providing GBP Eco Render Plus (Eco Friendly, Pre Polymerised, self curing, Ready to use wet mix plaster upto 5mm thickness covering area per bag. 35-40 sq.ft. (On ACC Block Surface/Single Coat for Plaster Surface) including providing Eco friendly, Pre-polymerised, wet mix plastering material that is suitable for all kinds of building facades, RCC Facades, Masonry Facades etc complete, including 35 years guarantee of the product on Rs. 100/- stamp paper.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
55	<b>Item No. 55</b> : .Providing & applying 13mm thick <b>internal plaster in gupsum</b> (stucco plaster) of approved make with neat smooth finish at all height and location for masonry except stone masonry including scaffolding hacking of concrete surface finishing etc complete.as per manufactures specifications and as directed by Engineer in charge	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
56	<b>Item No. 56</b> : Providing sand face plaster externally in two coats using approved screened sand in all positions, including providing base coat of 15 mm thick in cement mortar 1:4 mixing approved water proofing compound at the rate of 1 kilogramme / 50 kg of cement and curing the same for not less than two days and keeping the surface of base coat rough to receive the sand faced treatment 8 mm thick in cement mortar 1:4 and finishing the surface by taking out grains and curing for 14 days including preparing the surface, watering and scaffolding etc. complete.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
57	<b>Item No. 57</b> : Providing waterproof plaster in W.C. and bath 20 mm thick for dado in cement mortar 1:3 with neat finishing, floating using waterproofing compound at the rate of 1 kg. per bag of cement of approved make and manufacturer and curing (and filling joints of Nahani trap & any outlet by properly) etc . Complete.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
58	<b>Item No.58</b> :-Providing waterproof bedding 25 mm thick for flooring of bath and W.C. in cement mortar 1:3 using 1 kg of waterproofing compound of approved make and manufacturer per bag of cement including leveling, curing etc. complete.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
59	<b>Item No.59</b> : Providing waterproofing in W.C. and bath including brick bat coba in all position including providing & laying 12mm bedding in cement mortar 1:3 on concrete slab with waterproofing compound @ 1kg/per bag of cement laying brick bat coba of required thickness in cm 1:5 with waterproofing compound 1 kg/bag of cement grouting and finishing the top layer with 20mm thick brick bedding in cm mortar 1:3 with waterproofing compound 1 kg/per bag of cement & testing the treated portion for 48 hours by pond test and covering ten years' guarantee on requisite stamp paper including all leads, lifts and curing etc. complete	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
60	<b>Item No. 60</b> : Providing and laying waterproofing treatment of 112 mm average thickness consisting of 12 mm thick layer in Cement Mortar 1:3 with water proofing compound and jute fiber at the rate of 1 kg. each compulsory for per bag of cement, as base, constructing and laying brick bat coba in cement mortar 1:5 with waterproofing compound at the rate of 1 Kg per bag of cement and having average thickness of 80 mm and finishing with 20 mm thick cement plaster layer in cement mortar 1:3 with water proofing compound at the rate of 1 Kg per cement bag, including all lead, lifts and laid to proper slope to drain off water entirely including Watta, beveled or Champhered portion at the junction of parapet and work upto a height of 300 mm or as directed and including finishing the top layer of water proofing treatment with false marking of 30 cm x 30 cm or as directed, Curing and covering the whole treatment with ten years' guarantee, on requisite stamp paper etc. complete	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
61	<b>Item No. 61</b> : .Providing and laying in position polished Kota Stone flooring 55 cm. x 55 cm of approved quality 25mm to 30mm thick in plain/diamond pattern on a bed of cement mortar 1:6 including cement float, filling joints with neat cement slurry, curing, polishing and cleaning etc. complete.	Bd/M-3 P-380	
62	<b>Item No. 62</b> :Providing and fixing in required position skirting or dado of polished Kotah Stone slab 20 mm to 25 mm thick fixed on base on plaster of cement mortar 1:4 including cement float, filling joints with cement slurry, curing, rubbing, polishing and cleaning complete.	Bd/M-5 P-381	
63	<b>Item No. 63</b> : Providing and laying machine cut mirror polished Granite stone slab 60 cm x 45 cm or of required size and 16 mm to 18 mm thick of approved quality veins and colour for flooring in required pattern laid on a bed of cement mortar 1:6 including neat cement float, filling joints with neat coloured cement slurry, curing, hand polishing and cleaning complete.	Bd/M-16 page-387	Except granite slab of specified size and thickness
64	<b>Item No. 64</b> : Providing and fixing machine cut mirror polished Granite stone slab 60 cm x 45 cm or of required size and 16 mm to 18 mm thick of approved quality, vein and colour for dado and skirting fixed on base plaster on cement mortar 1:4 including filling joint with neat coloured cement slurry, curing, hand polishing and cleaning complete.	Bd/M-17 page -387	Except granite slab of specified size and thickness
65	<b>Item No. 65</b> : Providing and laying Rectified and vitrified mirror finish decorative type tiles of size 900 mm x 900 mm and 8 to 10 mm thick standard manufacturing company of first quality (like	Bd/M-12 P-385	



Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
	Marbonite/Porcelain) of approved make, shade and pattern for flooring in required position laid on a bed of 1:4 cement mortar, cement paste, filling joints with neat cement slurry, curing and cleaning etc. complete.		
66	<b>Item No. 66</b> : Providing and fixing Rectified and vitrified mirror finish decorative type tiles of size 600 mm x 600 mm and 8 to10 mm thick of approved make, shade and pattern and having water absorption between 0.08% to 2.5% for flooring in required position laid on plaster of 1:4 cement mortar, cement paste, filling joints with neat cement slurry, curing and cleaning etc. complete.	Bd/M-12 P-385	
67	<b>Item No. 67</b> : Providing and fixing Rectified and vitrified mirror finish decorative type tiles of size 600 mm x 600 mm and 8 to10 mm thick of approved make, shade and pattern and having water absorption between 0.08% to 2.5% for dado & skirting in required position laid on plaster of 1:4 cement mortar, cement paste, filling joints with neat cement slurry, curing and cleaning etc. complete.	Bd/M-13 P-386	
68	<b>Item No. 68</b> : Providing and laying decorative ceramic tiles of size300 mm x 300 mm and above 6 to 8 mm thick for flooring in required position laid on bed of cement mortar 1:4 including neat cement float, filling joints with neat cement slurry, curing and cleaning complete.	Bd/M-12 P-385	
69	<b>Item No.69</b> : Providing and fixing Rectified and vitrified mirror finish decorative type tiles of size 600 mm x 300 mm and 8 to 10 mm thick standard manufacturing company of first quality (like Marbonite/Porcelain) of approved make, shade and pattern for dado in required position laid on plaster of 1:4 cement mortar, cement paste, filling joints with neat cement slurry, curing and cleaning etc. complete.	Bd/M-13 P-386	
70	<b>Item No. 70</b> : .Providing and laying polished Kota stone slabs 25 to 30 mm thick for treads and risers for steps and staircase in one piece with rounded nosing & engraving three lines for treads on bed of 1:4 cement mortar including neat cement float, filling joints with cement slurry, curing, polishing and cleaning etc. complete.	Bd/M-22 P-390	
71	<b>Item No.71:</b> .Providing and laying Granite slabs 20 mm thick of approved quality, colour and veins, for treads and risers of steps and staircases in one piece with round nosing & engraving three lines for treads on bed of 1:4 cement mortar including neat cement float, filling joints with cement slurry to match colour of the slabs, curing, polishing and cleaning etc. complete.	Bd/M-26 P-391	
72	<b>Item No.72</b> : Providing sills, jambs and frames of white/approved colour marble slabs 20 mm thick of approved quality, vein and colour with machine polished surface on a bed of cement mortar 1:4 including neat cement float, filling joints with cement slurry to match the colour of the slabs, curing polishing and rounding edges, cleaning etc. complete.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
73	<b>Item No. 73</b> : Providing and laying Polished Chequered / coloured cement tiles for flooring in required position laid on bed of cement mortar 1:4 including neat cement float, filling joints with neat cement slurry, curing, polishing and cleaning complete.	Bd/M-33(b) P-392	
74	<b>Item No. 74</b> :.Providing and constructing Kitchen Platform in granite slab of approved type and design with 0.60 metre wide and of 0.75 meter height with Kadappa supports. The gap in between supports to be filled with cement mortar 40 mm thick kadappa below the granite top and all vertical kadappa support including front granite patti supports finished with the granite top on it. (without sink)	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
75	Item No. 75 : Providing Second class Burnt Brick masonry in cement mortar 1:6 using flyash bricks in superstructure including striking joints racking out joints watering and scaffolding complete.	BD- G5 Page 315	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
76	<b>Item No. 76</b> :Providing and fixing anodized Alluminium fully glazed centrally pivoted doors including door frame with powder coating 5 milimeter thick sheet glass necessary fixtures and fastenings, neoprene type rubber plain gaskets as per IS standard and detailed drawing etc complete. (Sample to be got approved from Superintending Engineer before use)	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
77	<b>Item No. 77</b> :Providing and fixing C.C.T.W. double leaf 40mm thick second class fully panelled door without fanlights adopting sections and sizes as given in the Standard Specifications Volume-II (1981) or as per detailed drawings including brass fixtures and fastenings and finishing the wood work with one coat of primer complete. (Without frame)	Bd/T-7 P-481	
78	<b>Item No78</b> :Providing and fixing solid core flush door in double leaf 35 milimeter thick decorative type of exterior grade as per detailed drawings, approved face veneer on both sides brass oxidised hinges, all necessary beads, moulding and lipping, brass oxidised fixtures and fastenings with mortise lock, chromium plated handles on both sides, finishing with french polishing including Country Cut Teak wood second class fully glazed 40 milimeter thick ventilator rectangular in shape adopting sections and sizes as given in Standard specifications Volumn - II (1981) or as per drawings including chromium plated fixtures and fastenings and finishing the wood work one coat of primer complete. (without frame and mild steel bar) as per drawing	BD/T-34 Page 494 Double shutter	The work shall be carried out as per the wording of item and as directed by Engr. incharge.

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
79	<b>Item No. 79</b> :Providing and fixing solid core flush door in Single leaf 35 milimeter thick decorative type of exterior grade as per detailed drawings, approved face veneer on both sides brass oxidised hinges, all necessary beads, moulding and lipping, brass oxidised fixtures and fastenings with mortise lock, chromium plated handles on both sides, finishing with french polishing including Country Cut Teak wood second class fully glazed 40 milimeter thick ventilator rectangular in shape adopting sections and sizes as given in Standard specifications Volumn - II (1981) or as per drawings including chromium plated fixtures and fastenings and finishing the wood work one coat of primer complete. (without frame and mild steel bar) as per drawing	Bd/T-34 page 499	
80	<b>Item No. 80</b> : Providing and fixing fibre glass reinforced polyester door shutter 30 mm thick as per IS : 14856 (2000) (Reaffirmed 2006) without ventilator including chromium plated fixtures and fastening with chromium plated handles on both sides etc. complete.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
81	Item No. 81 :Providing and fixing false ceiling with eco-friendly light weight calcium silicate tiles of Spintone surface textured “Aerolite” make or equivalent of size 595 x 595 mm having 15 mm thick densified micro look edge and 100 % humidity resistance, incombustible as per BS 476 Part IV and thermal conductivity 0.043 w/m 0 KC and NRC 0.50 placed in true horizontal level suspended grid of size 600x600 mm made from hot dipped GI steel sections on Sillhouette profile, rotary stitched double webbed white with 6mm reveal profile (white/black), where in main “T” runner of size 42mm x 14mm and between main tee at 600 mm centre to centre and secondary cross “T” of Size 33x14 mm x 0.40 thick of length 600 mm long spaced inter locked at middle of the first cross “T” in each pannel to form grids of 1200mm x 600mm and resting on periphery wall profile wall section 19mm (7+7) x 19mm x 0.40 thickness and laying false ceiling for services like diffusers grills including cutting, making opening for light fitting, fixtures, smoke detectors etc. whatever required, main tee runner to be suspended form ceiling using G.I. soffit cleats of size 25x35x1.6 mm of required length fixed to the ceiling with 6mm dia. and 50mm long dash fastener, 4mm, dia. G.I. adjustable rods with powder coated/good quality G.I. level adjustment clips of 35x30x08 mm spaced at 1200 ,, center to center along main tee all complete at all heights as per specifications, drawings and as per direction of Engineer in charge	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
82	<b>Item No.82:-</b> Providing and fixing mild steel grill gate with angle iron frame 65 x 65 x 10 mm with iron bars at 150 mm etc. centre to centre and diagonal flats as per the detailed drawing, including hinges, pivot blocks, locking arrangement, welding, reveting with oil painting in three coats of approved colour shade etc. complete. (Weight of gate 35 kg /sq.m.)	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
83	Item No. 83 : NCL or Structural Glazing : Providing & fixing structural glazing gesign supply fabrications and of structural glazing systems in corporations aluminium mullion (63 milimetre X 33 milimetre X 2 milimetre and weight 1.50kg/ metre and transom section ( 63 milimetre X 38 milimetre X 2 milimetre thick and weight 1.51 kilogramme per metre ) and shash section duly anodised ( 20 to 25 microns ) with all necessary fittings fixtures screws and hardware along with structural slash weather sealent ie. Dow Corning / GE/ or equavalant should be so designed by withstand dead load and wind load as per Indian Standard -875 ( Part III) 1987 and it should be also provided with specially designed drainage chamber to prevent the water leakage inside the building etc complete .	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge work as per Indian standard IS -875 ( Part III) 1987 and IS 1893 ( part -1) 2002- glazing design work should got approved from compitnt authority.
84	<b>Item No. 84:</b> Providing and fixing aluminum louvered windows consisting of vertical arm (40x12mm) with holders, lever and locking arrangement weighing at 0.91 Kg/Running Metre. with 3mm thick sheet glass louvers including filling the gaps in joints of cladding and external/internal adjoining portion with plaster silicon jelly with gun etc. complete.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
85	<b>Item No. 85:</b> Providing and fixing in position extruded modular alluminium fixed glass panel window having frame made out of extruded tubular section of size 63 mm x 38 mm x 2.00 mm thickness (wt. 1.054 kg/Running Metre) mechanically assembled at corners with glazing, beading of angle 25 mm x 25 mm x 1.60 mm thick (wt. 0.21 kg/Running Metre) including plain sheet glass 5.5 mm thick with rubber gasket and wooden encasement wherever necessary etc. as per approved drawing and specification etc. complete.	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
86	<b>Item No. 86 :</b> Providing and fixing in position extruded modular alluminium section two track sliding window mounted on rectangular frame of size 63 mm x 38 mm x 2.00 mm thick (1.054 kg/Running Metre) made up of two track drain bottom section of size 61 mm x 45 mm x 1.3 mm thick (1.055 kg/Running Metre) and top and sides sections of size 61 mm x 31 mm x 1.3 mm thick (0.659 kg/Running Metre). The shutter should be of bearing bottom of size 40 mm x 18 mm x 1.25 mm thick (0.417 kg/Running Metre) top member of size 40 mm x 18 mm x 1.20 mm thick (0.475 kg/Running Metre) Interlocking section size of 43 mm x 27 mm x 1.30 mm thick (0.558 kg/Running Metre) and handle section of size 43 mm x 18 mm x 1.30 mm thick (0.424 kg/Running Metre), selected quality 5.5 mm thick clear glass to be fixed in shutter with neoprene gasket with approved quality PVC rollers, necessary locks, handles, PVC lining and wooden encasement wherever necessary etc. complete. (b) With powder coating	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
87	<p><b>Item No. 87</b> :Providing and fixing in position extruded modular alluminium section three track sliding (upto 1.20 mtr. height) window mounted on rectangular frame of size 100 mm x 40 mm x 1.30 mm thick (wt 0.976 kg/Running Metre) made up of three track drain bottom section of size 92 mm x 45 mm x 105 mm thick (1.659 kg/Running Metre) Three track top and sides of size 92 mm x 31 mm x 1.3 mm thick (0.933 kg/Running Metre) The shutter comprising of bottom and top member of size 40 mm x 18 mm x 1.25 mm thick (0.417 kg/Running Metre) Interlocking section of size 40 mm x 18 mm x 1.10 mm thick (0.469 kg/Running Metre) handle sides of 40 mm x 18 mm x 1.25 mm thick (0.417 kg/Running Metre) with 5.5 mm thick selected quality clear glass fixed in shutter with approved quality neoprene gasket, PVC rollers, locks, handles, PVC lining and wooden encasement wherever necessary etc. complete. (b) With powder coating</p>	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
88	<p><b>Item No. 88</b> :Providing and fixing C.C.T.W. cover moulding 45 x 20 mm over doors and windows in the required shape &amp; size as per drawing, including all mouldings and finishing with French polishing etc. complete.</p>	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
89	<p><b>Item No. 89:</b> Providing and fixing alluminium grill / jali of heavy type 65X75 mm opening and 10 mm thick weighting 2.6 0kg/sq.m of approved quality and design to windows and ventilators including providing alluminium “F” Patti weighing 0.22 Kg./Running Metre. etc. complete as per approved drawing or as directed by Engineer in charge.</p>	-----	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
90	<p><b>Item No. 90</b> :Providing and fixing mild steel grill work for window, ventilator weighing 25 kg per Sqm. as per drawing including necessary welding and painting with one coat of Red Oxide Zinc Chromate primer and two coat of synthetic enamel paint etc. complete.</p>	Bd/U-1 P-537	
91	<p><b>Item No. 91</b> :Providing and fixing stainless steel of S.S. 316 quality for railing with steel hand rail pipe of 50,80 mm dia of 18 gauge thickness with steel pipe of 50.80 mm dia for vertical post @ 1.2 metre centre to centre with bottom 75mm dia plates fixed on flooring with proper anchoring and middle horizontal steel pipe rails of 15.85 mm dia of 18 gauge thickness @ 150mm centre to centre between top rail and flooring and fixing the pipe to vertical post by steel adoptor including finishing, grinding glossy polish fabrication and fixing as per approved drawing and over all weight of steel raling shall not be less than 7.5 kg per square meter complete.etc complete</p>		The work shall be carried out as per the wording of item and as directed by Engr. incharge.
92	<p><b>Item No. 92</b> Providing and fixing mild steel grill railing 15 kg per Sqm. with country cut teak wood hand rail of size 75 x 60 mm and sill of 75 x 25 mm for staircase including fabricating, fixtures, erecting, painting grill work with painting with one coat of Red Oxide Zinc Chromate primer and two coat of synthetic enamel paint and polishing the sill, hand rail with French polishing complete.</p>	Bd/U-2 P-537	

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
93	<b>Item No. 93</b> : Providing and applying two coats of exterior Acrylic latex paint of approved colour and shade to the plastered surface as per manufacturers specification including scaffolding preparing the surface etc. complete. (Excluding primer coat).		The work shall be carried out as per the wording of item and as directed by Engr. incharge.
94	<b>Item No.94</b> Providing and applying interior wall finish luster of Asian / Berger / Nerolac / Dulex Paints or equivalent make on internal wall surface as detailed below Scrapping the surface with emery paper and wipe clean. Applying Asian / Berger / Nerolac / Dulex Paints or equivalent wall primer with mineral turpentine with brush 8 to 10% and oil 15 to 20% with roller and allowing to dry for a period 6 to 8 hours. Applying Asian / Berger / Nerolac / Dulex Paints or equivalent Acrylic wall putty with appropriate proportion of water allowing to dry for period 4 to 6 hours. Scrapping with Emery paper 180 and wipe clean. Applying Asian / Berger / Nerolac / Dulex Paints or equivalent wall primer with brush with mineral turpentine 8 to 10% and oil 15 to 20% with roller Scrapping Emery paper 320 and wipe clean, Applying Asian / Berger / Nerolac / Dulex Paints or equivalent interior wall finish luster 1st coat with brush/rubber/spray with mineral turpentine 7 to 9% and Oil with roller 19 to 21% after 8 hours of activity and applying 2nd coat with of Asian / Berger / Nerolac / Dulex Paints or equivalent interior wall finish Lustre with mineral turpentine 7 to 9 % with brush and Oil with roller 19 to 21% after allowing dry for the period of 6 to 8 hours activity.		The work shall be carried out as per the wording of item and as directed by Engr. incharge.
95	<b>Item No.95</b> :- Providing and applying Three coat of synthetic enamel paint of approved colour and quality to new and old structural steel work and wood work in buildings, including scaffolding if necessary and preparing the surface by solvent degreasing and de-rusting by manual methods, preparing the surface etc. complete. excluding primer coat	Bd/O-5 P-405	
96	Item No 96 :- Providing and laying G.I. pipe in trenches 50 mm diameter heavy type having 60.3 mm outer dia. and 6.329 Kg. per meter weight and having embossed at every metre as ISI mark and name of the manufacturer with screwed sockets, joints, and necessary galvanised iron fittings such as backnuts, elbows, bends, tees, reducers, enlargers, plugs, etc. including providing and applying two coats of white oil paint with one coat of primer and necessary excavation and backfilling complete including removing existing pipe if necessary and conveying and stacking in P.W.D. chowky or as directed.	Bd/V-5	
97	Item No 97 :- Providing and laying G.I. pipe in trenches 80 mm diameter heavy type galvanised iron pipe having embossed at every metre as ISI mark having 88.90mm outer dia. and 10.309 Kg. per meter weight and having embossed at every metre as ISI mark and name of the manufacturer with screwed sockets, joints, and necessary galvanised iron fittings such as backnuts, elbows, bends, tees, reducers, enlargers, plugs, etc. including providing and applying two coats of white oil paint with one coat of primer and necessary excavation and backfilling complete including removing existing pipe if necessary and conveying and stacking in P.W.D. chowky or as directed.	Bd/V-5	
98	Item No 98 :- Providing and fixing G.I. pipes 15mm dia.. (outer	Bd/V-5	

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
	dia.. 21.32 mm & weight 1.27 kg./ Running Metre..) and having embossed at every metre as ISI mark and name of the manufacturer to walls, ceilings, floors etc. with screwed sockets, backnuts, elbows, tees, reducers, enlargers, plugs, clamps etc. including necessary drilling in holes in walls/ slabs etc. and remaking good the demolished portion to restore the same in original condition neatly and applying primer and two coats of white oil painting including necessary scaffolding including removing the existing pipe, if necessary and conveying and stacking the same in P.W.D. chowky or as directed inclusive all leads and lifts etc. complete..)	P-551	
99	Item No 99 :- Providing and fixing G.I. pipes 20mm dia.. (outer dia.. 26.90 mm & weight 1.64 kg./ Running Metre..)and having embossed at every metre as ISI mark and name of the manufacturer to walls, ceilings, floors etc. with screwed sockets, backnuts, elbows, tees, reducers, enlargers, plugs, clamps etc. including necessary drilling in holes in walls/ slabs etc. and remaking good the demolished portion to restore the same in original condition neatly and applying primer and two coats of white oil painting including necessary scaffolding including removing the existing pipe, if necessary and conveying and stacking the same in P.W.D. chowky or as directed inclusive all leads and lifts etc. complete..)	Bd/V-5	
100	Item No 100 :- Providing and fixing G.I. pipes 25mm dia.. (outer dia.. 33.70 mm & weight 2.52 kg./ Running Metre..) and having embossed at every metre as ISI mark and name of the manufacturer to walls, ceilings, floors etc. with screwed sockets, backnuts, elbows, tees, reducers, enlargers, plugs, clamps etc. including necessary drilling in holes in walls/ slabs etc. and remaking good the demolished portion to restore the same in original condition neatly and applying primer and two coats of white oil painting including necessary scaffolding including removing the existing pipe, if necessary and conveying and stacking the same in P.W.D. chowky or as directed inclusive all leads and lifts etc. complete..)	Bd/V-5	
101	Item No 101 :- Providing and fixing G.I. pipes 50mm dia.. (outer dia.. 60.30 mm & weight 5.23 kg./ Running Metre..) and having embossed at every metre as ISI mark and name of the manufacturer to walls, ceilings, floors etc. with screwed sockets, backnuts, elbows, tees, reducers, enlargers, plugs, clamps etc. including necessary drilling in holes in walls/ slabs etc. and remaking good the demolished portion to restore the same in original condition neatly and applying primer and two coats of white oil painting including necessary scaffolding including removing the existing pipe, if necessary and conveying and stacking the same in P.W.D. chowky or as directed inclusive all leads and lifts etc. complete..)	Bd/V-5	
102	Item No 102 :- Providing and fixing 15mm dia chloromiated polyvon chloride ( CPVC) pipes having tharmal stability for hot and cold water supply including all CPVC plain and brass threded fitting including fixing the pipe with clamps at 1.0 m spacing including joining of pipe and fitting with one step CPVC solvent Consealed , refilling and testing joints inclusive all leads and lifts etc.complete. as per instruction of engineer encharge. Consealed work including cutting chases and making good the walls etc	CP-P5 86/123 MCGM	The work shall be carried out as per the wording of item and as directed by Engr. incharge.

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
103	Item No 103 :- Providing and fixing 20mm dia chlorominate polyvinyl chloride ( CPVC) pipes having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fitting including fixing the pipe with clamps at 1.0 m spacing including joining of pipe and fitting with one step CPVC solvent Consealed , refilling and testing joints inclusive all leads and lifts etc.complete. as per instruction of engineer incharge. Consealed work including cutting chases and making good the walls etc	CP-P5 86/123	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
104	Item No 104 :- Providing and fixing 25mm dia chlorominate polyvinyl chloride ( CPVC) pipes having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fitting including fixing the pipe with clamps at 1.0 m spacing including joining of pipe and fitting with one step CPVC solvent Consealed , refilling and testing joints inclusive all leads and lifts etc.complete. as per instruction of engineer incharge. Consealed work including cutting chases and making good the walls etc	CP-P5 86/123	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
105	Item No 105 :- Providing and fixing 32mm dia chlorominate polyvinyl chloride ( CPVC) pipes having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fitting including fixing the pipe with clamps at 1.0 m spacing including joining of pipe and fitting with one step CPVC solvent Consealed , refilling and testing joints inclusive all leads and lifts etc.complete. as per instruction of engineer incharge. Consealed work including cutting chases and making good the walls etc	CP-P5 86/123	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
106	Item No. 106 : Providing and fixing 40mm dia chlorominate polyvinyl chloride ( CPVC) pipes having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fitting including fixing the pipe with clamps at 1.0 m spacing including joining of pipe and fitting with one step CPVC solvent Consealed , refilling and testing joints inclusive all leads and lifts etc.complete. as per instruction of engineer incharge. Consealed work including cutting chases and making good the walls etc. External work	CP-P5 86/123 MCGM	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
107	Item No. 107 : Providing and fixing 100mm dia chlorominate polyvinyl chloride ( CPVC) pipes having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fitting including fixing the pipe with clamps at 1.0 m spacing including joining of pipe and fitting with one step CPVC solvent Consealed , refilling and testing joints inclusive all leads and lifts etc.complete. as per instruction of engineer incharge. Consealed work including cutting chases and making good the walls etc. External work	CP-P5 86/123 MCGM	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
108	Item No. 108 : Providing and fixing 150mm dia chlorominate polyvinyl chloride ( CPVC) pipes having thermal stability for hot and cold water supply including all CPVC plain and brass threaded fitting including fixing the pipe with clamps at 1.0 m spacing including joining of pipe and fitting with one step CPVC solvent Consealed , refilling and testing joints inclusive all leads and lifts etc.complete. as per instruction of engineer incharge. Consealed work including cutting chases and making good the walls etc. External work .	CP-P5 86/123 MCGM	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
109	Item No. 109 : Providing and fixing in position UPVC/ SWR pipe 160 mm dia in any position including all fitting and accessories making joints / connection watertight with solvent cement scaffolding if necessary and making good the damages if	CP-P5 202/152 MCGM	The work shall be carried out as per the wording of item and as directed by Engr. incharge.



Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
	necessary ( Excluding excavation and refilling treanches) etc.complete as specified and directed ( no separate payment shall be mede for fittings and accessaries .		
110	<b>Item No. 110</b> :Providing and laying 225mm Dia. Salt Glazed Stoneware pipe including fittings such as bends, tees, single junctions, double junctions, laying, jointing (excluding excavation and refilling the trenches) etc. complete as directed.	Bd/V-39 P-573	
111	Item No. 111 :Providing and fixing P.V.C. Rain Water Pipes 110mm dia and having wall thickness of 2.2 to 2.7 mm conforming to I.S. 13592-1992 including proper rain water receiving recess with P.V.C. plug bend, necessary fittings such as offsets, shoes including fixing the pipe on wall using approved wooden cleats projecting 25 mm to 40 mm from face of wall & fixing with clips of approved quality & number, filling the joints using rubber gasket with solvent cement and properly resting the shoe of pipes on C.C. or masonry blocks, including necessary scaffolding, and maintenance for 3 years for any leakages or dislocation of pipes. All the PVC fittings and additional two piece socket clips shall be got approved from Engineer in charge etc. complete. (The contractors shall give 3 years guarantee bond for payment)	Bd/V-33 P-575	
112	Item No.112:Providing and fixing P.V.C. Soil/Waste water Pipes 110mm dia and having wall thickness of 3.2 to 3.8 mm conforming to I.S. 13592-1992 including P.V.C. plug bend, necessary fittings such as bend, tees, single junction, double junction, slotted vent offsets on walls or in the ground including fixing the pipe on wall using approved wooden cleats projecting 25 mm to 40 mm from face of wall and fixing with clips of approved quality and number, filling the joints using rubber gasket with solvent cement including necessary scaffolding, and maintenance for 3 years for any leakages or dislocation of pipes. All the PVC fittings and additional two piece socket clips shall be got approved from Engineer in charge etc. complete. (The contractors shall give 3 years guarantee bond for payment)	Bd/V-35 P-570	
113	Item No. 113:Providing & fixing in position UPVC, Ultra Voilet stabilised 90 mm outer diameter cowl dome confirming I.S. 4985 including making joints with solvent / cement etc. complete.		The work shall be carried out as per the wording of item and as directed by Engr. incharge.
114	Item No. 114:Providing and fixing heavy type 12mm. Diameter screw down bib/stop tap of brass of approved quality and make, including necessary sockets, union nut, testing etc. complete.	Bd/V-8 P-554	
115	Item No. 115:Providing and fixing stealth faucet bib cock with flange of approved jaguar or equivalent make including necessary socket / union nut etc complete.		The work shall be carried out as per the wording of item and as directed by Engr. incharge.
116	Item No. 116: Providing and fixing soap dispenser with glass bottle of approved jaguar or equivalent make etc complete.		The work shall be carried out as per the wording of item and as directed by Engr. incharge.

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
117	Item No. 117:Providing and fixing Towel ring round flange of approved jaguar or equivalent make etc complete.		The work shall be carried out as per the wording of item and as directed by Engr. incharge.
118	Item No. 118:Providing and fixing steath faucet Toilet roll Holder with flab of approved jaguar or equivalent make etc complete.		The work shall be carried out as per the wording of item and as directed by Engr. incharge.
119	Item No. 119 :Providing and fixing 25 mm.dia screw down wheeled stop tap of steel with chromium plating of approved quality and make bearing I.S.I. mark, including sockets, union nut complete.	Bd/V-9 P-555	
120	Item No. 120 :Providing and fixing 50mm.dia screw down wheeled stop tap of steel with chromium plating of approved quality and make bearing I.S.I. mark, including sockets, union nut complete.	Bd/V-9 P-555	
121	Item No. 121 :Providing and fixing 80mm.dia screw down wheeled stop tap of steel with chromium plating of approved quality and make bearing I.S.I. mark, including sockets, union nut complete.	Bd/V-9 P-555	
122	Item No. 122:Providing and fixing fittings and accessories such as ball cock, overflow pipe with mosquito proof coupling, scour, pipe with plug, manhole with cover and locking arrangement, connecting pipes and embedding intake and outflow pipes into the R.C.C water reservior etc. complete.		The work shall be carried out as per the wording of item and as directed by Engr. incharge.
123	Item No.123:Providing and fixing Orrisa type white glazed earthenware 580 mm x 450 mm water closet pan including trap, cast iron soil and vent pipes upto the outside face of the wall including 100 mm. diameter cast iron plug bend, cement concrete bedding, 10 litres capacity H.D.P.E. flushing cistern with fittings, inlet pipe with stop tap, brackets, 32 mm. diameter galvanised iron heavy type flush pipe with fittings and clamps, painting to exposed pipes and cutting and making good the walls and floors etc. complete. (Excluding water proofing with brick bat coba)	Bd/V-20 P-559	
124	Item No. 124 :Providing and fixing European type coloured glazed earthenware 580mm coupled closet syphonic trap with syphonic low level white glazed 10 litres cistern with black bakelite seat and lid with chromium plated brass hinges including cast iron soil and vent pipes upto the outside face of the wall including 100 mm diameter cast iron plug bend, inlet pipe, stop tap etc. all fittings, cutting and making good walls and floors complete.	Bd/V-22 P-562	
125	Item No. 125: Providing and fixing White glazed earthenware ..... type urinal with white H.D.P.E. flushing cistern of 5 litres capacity with fittings, inlet pipe and stop tap, brackets for fixing the cistern, 32 mm diameter galvanised iron heavy type flush pipe with fittings and spreader arrangement etc. complete.	Bd/V-25 P-563	The work shall be carried out as per the wording of item and as directed by Engr. incharge.
126	Item No.126 Providing and fixing white glazed earthenware	Bd/HES-21	The work shall be carried

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
	wash hand basin of Approved Parryware or equivalent manufacturer 550mmx450mm size brackets, rubber plugs and brass chain stop tap and necessary pipe connection including bottle trap and polyethylene waste water pipe upto outside face of the wall making good the damaged surface testing etc. complete.	P-193	out as per the wording of item and as directed by Engr. incharge.
127	Item No.127 : Providing and fixing Steel Sink of size 60 x 45 x 25 cm to the kitchen platform including UPVC waste coupling pipe and coupling, making good the damaged surface etc. complete.		The work shall be carried out as per the wording of item and as directed by Engr. incharge.
128	Item No.128: Providing and fixing 10 cm dia. PVC Nahani Trap fixed with PVC grating, PVC plug bend and piece of PVC pipe upto plug bend, scaffolding etc. complete.	Bd/V-32 P-567	
129	Item No.129: Providing and constructing Brick Masonry Inspection Chamber 60 cm x 45 cm and 45 cm to 90 cm in depth including necessary excavation, cement concrete 1:4:8 foundation, cement concrete 1:2:4, 23 cm thick channels, brick masonry, plastering from inside and outside as required in cement mortar 1:3 and airtight cast iron heavy type lid (1 CWT weight) with frame fixed in cement concrete 1:2:4 etc. complete as directed.	Bd/V-43 P-574	
130	Item No. 130:Providing and constructing Brick Masonry Inspection Chamber 90 cm x 45 cm and 90 cm to 150 cm in depth including necessary excavation, cement concrete 1:4:8 foundation, cement concrete 1:2:4, 23 cm thick channels, brick masonry, plastering from inside and outside as required in cement mortar 1:3 and airtight cast iron heavy type lid (1 CWT weight) with frame fixed in cement concrete 1:2:4 etc. complete as directed.	Bd/V-43 P-574	
131	Item No. 131 : Providing and fixing 15 cm x 10 cm Salt Glazed Stoneware Gully Trap in cement concrete 1:4:8 outside the building including connecting to salt glazed stoneware pipe, brick masonry chamber with cast iron lid grating for the gully trap etc. complete as directed.	Bd/V-38 P-572	
132	Item No. 132: Providing and fixing decorative stealth series ivory gold or chromium plated Overhead Shower of approved jaguar or equivalent make with flang, necessary angular connecting rod, union nut, washers, Teflon tape etc. complete.		The work shall be carried out as per the wording of item and as directed by Engr. incharge.
133	Item No. 133 :Providing and fixing Chromium Plated Alluminium Towel Rails 16 mm (5/8") dia. of required length and approved quality fixed on teak wood plate 75 mm x 10 mm (3" x 3/8") including providing teak wood block in the brick work etc.		The work shall be carried out as per the wording of item and as directed by Engr. incharge.
134	Item No.134: Providing and fixing Mirrors of approved Indian quality, copper plated with 10 mm (3/8") thick ply wood backing, in the masonry etc. complete..		The work shall be carried out as per the wording of item and as directed by Engr. incharge.

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
135	Item No. 135 : Providing and fixing 45 cm wide steel ladder of 40 x 6 mm mild steel flat stringers and steps of 18 mm diameter mild steel bar including fixing it in 1:2:4 cement concrete block 60 x 30 x30cm and painting the ladder with antirust primer and 2 coats of oil paint etc. complete.	Bd/V-19 P-559	
136	Item No. 136 :Providing and casting for coping to plinth or parapet rounded or chamfered as per drawing (Using RMC) plain cement concrete M-15 of trap meta including centering formwork, compacting, finishing the exposed faces with sufficient minimum thickness of 1:3 cement plaster to give a smooth and even surface or roughening the exposed faces if special finish is to be provided and curing.		The work shall be carried out as per the wording of item and as directed by Engr. incharge
137	Item No. 137: Providing and fixing 25 mm thick marble tablet of size and description as per detailed drawings including engraving the description,filling the lead, moulded marble 1:2 cement mortar border etc.complete.		The work shall be carried out as per the wording of item and as directed by Engr. incharge
138	Item No. 138: Providing structural steel work in rolled sections fixed with connecting plates or angle cleats as in main and cross beams, hip and jack rafters, purlins connecting to truss members and the like as per detailed designs & drawings or as directed including cutting, fabricating, hoisting, erecting, fixing in position, making riveted/ bolted/ welded connections and Red Oxide Zinc Chromate primer and two coat synthetic enamel paint, scaffolding etc. complete.	Bd/C-3 P-275	
139	Item No. 139:Providing and fixing 2.5 to 3.00 mm thick Acrylic decorative sheet roofing including galvanized iron J or L hook bolts, galvanized iron and bituminous washers, galvanized iron cramp bolts, nuts and scaffolding complete.		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
140	Item No.140:-Providing and application of INTEGRAL CRYSTALLINE waterproofing treatment for Podium and terrace Waterproofing /entire quantity of the concrete of basement raft / retaining walls by using Penetron Admix or equivalent Penetron Slurry@ 1.4 Kg per SQM @0.7 Kg per Sqm. per coat in two coats having speed of penetration of 31 Cm in 56 days and resistance to 20 bar hydrostatic water head of M/s ICS Penetron International Ltd., USA @ 0.8% by weight of cementitious content. The material must qualify as PRAH grade PERMEABILITY REDUCING ADMIXTURE FOR HYDROSTATIC conditions and meet the following requirements Specified in ACI-212-3R-2010 at the recommended dosage rate of 0.8% by weight of cementitious materials which is Capable of reducing Permeability of concrete by more than 90%, compared with control concrete, when tested as per DIN 1048 (after applying 4 cycles of hydrostatic pressure) and permeability co-efficient calculated as per Valenta / Darcy's formula and U –sign approved as per DIN 18998 with chloride content less than 0.1%, alkali content less than 9.3% and no negative effect on corrosion of steel reinforcement. Work shall be carried out as per the approved method of waterproofing accepted by the Engineer in-charge. Work shall be executed by certified applicator only and shall be guaranteed for 10 years against any leakages and guarantee shall be provided on Rs.500/- stamp paper in approved Performa.		The work shall be carried out as per the wording of item and as directed by Engr. Incharge

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
141	Item No.141:- Providing and application of waterproofing from outside basement lift pits and other underground structures ....Work shall be executed by certified applicator only and shall be guaranteed for 10 years against any leakages and guarantee shall be provided on Rs.500/- stamp paper in approved Performa.	CS-WP/ 33/40 MCGM	The work shall be carried out as per the wording of item and as directed by Engr. Incharge
142	Item No.142:- Removing any kind of debris including loading in truck and conveying to dumping point approved by BMC, unloading, spreading etc. complete. With all leads and lifts. Rates should be used only when transportation upto 40 km only	Necessary permission from MCGM should be taken by contractor	The work shall be carried out as per the wording of item and as directed by Engr. Incharge
143	Item No.143:- Providing and fixing chicken wire mesh (Reference IS : 3150 - 1982) of 19 size of aperture at the junction of R.C.C. members and brick work of approved quality including fixing mesh in position by necessary nailing in concrete or / B.B. masonry and or tying by binding wire etc. complete		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
144	Item No.144:- Providing and fixing hydraulic door closer of approved quality and make to door shutter including making proper adjustment for smooth operation etc. complete.		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
145	Item No.145:- Providing rain water harvesting by constructing brickmasonry collection chamber 60 X 60 Cm size and 90 Cm depth and plastering on side of walls, Cc copong 10mm thick and RCC cover with frame of size 90 X45 Cm 2Nos including providing 120 X 120 Cm size filter media of 30Cm thick 6mm grit layer, 30 m thick 12 mm crush metal layer, 30 Cm 20 mm crushed metal layer and 30 Cm thick 40 mm crushed metal layer and necessary excavation and refilling etc complete.		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
146	Item No. 146 : Providing and erecting two legged mild steel tubular scaffolding, of width 1200 to 1500 mm largely free standing, using H frames or mild steel tubular pipes of minimum 40 mm diameter, with base plates, fixed or adjustable with necessary clamps, couplers, brackets for projections, joints pins, pullies and other accessories, including steel angle or tubular pipe bracings at adequate intervals, access platforms of metal or timber planks of span not exceeding 2.5 meters, including access ladders with intermediate platforms. The scaffolding is to be suitably braced and anchored to the building using support systems created temporarily at the openings in the walls using vertical and horizontal details on the entire building face, required, and safety platforms at ground level covering the entrances to the building. Item includes Providing and erecting Nylon Net covering fixed to the exterior face of scaffolding		The work shall be carried out as per the wording of item and as directed by Engr. Incharge

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
	including duct tape with safety signage 'work in progress' and 'caution' boards at the ground level and demarcation of entrances to the building. The measurements will be calculated by multiplying the length of the two legged units at the center line of the 1200-1500 mm scaffold unit width x heights of the individual rows. The rates will include for the cross bracing between the rows of the scaffold units.		
147	Item No. 147: Providing and fixing Jute Kantan (Tarat) screen to the scaffolding of external guniting as directed including removing the same after the work is over etc. complete.		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
148	Item No. 148 : Providing Second Class Burnt Brick masonry with conventional/ I.S. type bricks in cement mortar 1:6 in superstructure as backing in composite masonry including scaffolding, racking out joints and watering etc. complete.	BD/ G-6 Page 316	The work shall be carried out as per the wording of item and as directed by Engr. Incharge
149	Item No. 149 :Providing rough cast cement plaster externally in two coats to concrete/ brick/ stone masonry in all positions including preparing the base, watering and applying base coat of 12 to 15 mm thick in cement mortar 1:4 using water proofing compound at the rate of 1Kg per 50Kg of cement and rough cast treatment 12 mm thick in proportion 1:1½:3 including scaffolding and 14 days curing etc. complete.	BD/ L-8 Page 370	The work shall be carried out as per the wording of item and as directed by Engr. Incharge
150	Item No. 150 :Providing and carrying out video shooting of roads, bridges building, other programmes including hiring of vehicle equipment for video shooting, titling, lightening, mixing, lettering, editing, including cost of two colour cassettes of approved make and quality etc. complete		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
151	Item No. 151 :Providing and laying in position ready mixed concrete of M-20 grade manufactured in fully automatic batching plant including transporting and pumping from transit mixer with all lead and lift for trimix flooring of 100mm thick including channel shuttering mixing floor hardener @ 7kg /Sqm. and steel fiber @ 20 kg /Cum vibrating with a poker vibrate and finished with screed board vibrate, vacuum dewatering process, finishing with grooves of 4mm wide and 18mm deep or as per size required filling the same with bitumen/approved filler material as per manufactures specifications, complete as directed by Engineer-in charge.		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
152	Item No. 152 :Providing and fixing full height door shutter at required locations having height more than 1.5m made by using solid core commercial type flush doors 35 mm thick of requisite manufacture viz. Anchor / Century / Kenwood /Duro /jet or equivalent with both sides Formica laminate sheet finished lamination pateren with or without grooves externally with necessary (BTC) moulding ,antitermite treatment to plywood and wood work including all leads and lifts complete as per Architects Drawing and instruction of Engineer –in charge.etc....complete		The work shall be carried out as per the wording of item and as directed by Engr. Incharge

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
153	Item No. 153 :Providing and fixing on site full height both side matching veneer finished door shutters 1.5meter made by using solid core commercial type flush door 35mm of requisite manufacture viz Anchor/Century/Kenwood/Duro /jet or equivalent with generally confirming to IS 710-1980 finished with 3.5 to 4 mm matching veneer finished grooves on both sides including melamine polishing and antitermite treatment to plywood and wood work including ten years guarantee bond etc. including all leads and lifts etc. complete necessary lipping (BTC) moulding hardware locks handles and closer EN2 with hold open polishing etc. as per Architects Drawing and instruction of Engineer –in charge etc. complete (As directed by Engineer in Charge)		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
154	Item No. 154 :Providing and fixing on site full height laminated lobby door shutters in connecting passage at required locations and having height more than 1:5 meter made by using solid core commercial type flush door 35mm thick requisite manufacture viz Anchor / Century / Kenwood / Duro or jet equivalent with generally confirming to IS 710-1980 finished with 1.05mm thick laminate matt / suede/fine line finished lamination pattern with or without grooves on both sides Antitermite treatment to plywood and woodwork with ten years guarantee bond etc. including all leads and lifts etc. complete .Necessary lipping with (BTC) moulding hardware locks handles and closer EN2 with hold fast open polishing etc. as per Architects Drawing and instruction of Engineer – in charge etc. complete		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
155	Item No. 155 :Providing and fixing stealth faucet 2 way Bib Cock with flange of approved jaguar or equivalent make including necessary socket/Union nut etc complete.		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
156	Item No. 156 :Providing and fixing stealth faucet Sink Cock with swinging spout (Wall mounted model) with all flanges of jaguar or equivalent make including necessary socket/Union nut etc complete.		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
157	Item No. 157 :Providing and fixing stealth faucet concealed stop cock, Extra heavy Body with adjustable wall flange size 15 mm of approved jaguar or equivalent make etc. complete		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
158	Item No. 158 :Providing and fixing Double coat Hook of approved jaguar or equivalent make including necessary socket / union nut etc. complete		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
159	Item No. 159 :Providing and fixing partition for Urinals of approved Parryware or equivalent manufacturer etc. complete		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
160	Item No. 160 :Providing and fixing Pillar cock of approved jaguar or equivalent make including necessary socket /union nut etc. complete		The work shall be carried out as per the wording of item and as directed by Engr. Incharge

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
161	Item No. 161 :Providing and fixing Stealth Facuet Angle Cock of approved jaguar or equivalent make including necessary socket / union nut etc. complete. (JAGUAR code : SOI-6047)		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
162	Item No. 162 :Providing and fixing Stealth Facuet Jet Spray of approved jaguar or equivalent make including necessary socket / union nut etc. complete. (JAGUAR code : SOI-6047)		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
163	Item No.163: Providing and casting in situ Incline rock anchor pile in soil and rock fixing with 5 no. of H.T. Strands direct placed by pressure grouting as per design by post tensioning rock anchor capacity 55 MT including epoxy coating sand spraying and fabrication etc. complete.(As per rotary method)	As per rotary method	The work shall be carried out as per the wording of item and as directed by Engr. Incharge
164	Item No. 164: Providing and fabricating structural steel works in rolled sections like joists, channels, angles, tees etc. As per detailed designs and drawings including fixing in position with connecting plates, braces and welding, riveting, bolting as necessary including painting etc. Complete		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
165	Item No. 165: Providing and laying in position ready mix design mix M-30 grade cement concrete for reinforced cement concrete beams work as per detailed designs and drawings or as directed including providing and erecting steel centering and shuttering with strutting, propping etc. using cement content as per approved design mix, including pumping of concrete to site of laying and the cost of centering, shuttering, finishing and excluding reinforcement, including admixures in recommended proportions as per IS:9103 to accelerate, retard setting of concrete. Improve workability without impairing strength and durability as per direction of Engineer-In-charge. The mix design as per particularspecification shall be got approved by Engineer-In-charge before execution of item. The rate shall include cost of all specified materials and operation at all levels and heights, including the cost of centering, shuttering and excluding reinforcement which shall be paid under relevant item. (Below Plinth))		The work shall be carried out as per the wording of item and as directed by Engr. Incharge
166	Item No. 166: Providing and fixing in position T.M.T. bar reinforcement of various diameters for R.C.C. pile caps, footings, foundations, slabs, beams, columns, canopies, staircases, newels, chajjas, lintels, pardies, coping, fins, arches, etc. as per detailed designs, drawings and schedules including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required complete. (Below Plinth)	BD / F17 Page 306	The work shall be carried out as per the wording of item and as directed by Engr. Incharge
167	Item No. 167: Providing Soling using 80 mm size trap metal in 15 cm layer including filling voids with sand, ramming, watering etc. complete.	BD/ A-12/ page 264	The work shall be carried out as per the wording of item and as directed by Engr. Incharge



Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
168	Item No. 168: Providing and laying in position in situ plain cement concrete M- 25 grade using trap metal & River sand with minimum cement content as per approved mix design as per IS 456-2000 by Engineer - in -charge for foundation and bedding including admixtures to accelerate, retard setting of concrete to improve workability without impairing strength and durability. The rates shall includes bailing out water manually centering, shuttering, compacting by vibrator and curing (Excluding reinforcement) etc. complete.	Bd / E-1 Page 287	The work shall be carried out as per the wording of item and as directed by Engr. Incharge
169	Item No. 169: Providing and casting in situ dense and impervious cement concrete M-25 of trap metal for R.C.C. Slabs and landings upto and inclusive of 10 cm thickness As per detailed designs and drawings or as directed including providing and erecting steel Centering and shuttering with strutting, propping etc. and removal of formwork, necessary compaction, roughening the surface if special finish is to be provided and curing. (Excluding steel reinforcement)	Bd/ F-8(a) page 302 Except proportion	The work shall be carried out as per the wording of item and as directed by Engr. Incharge
170	<b>Item 170</b> - Providing M-30 R.C.C. cast in situ bored piles each of load capacity and as per design and of 600 mm diameter or as directed placed through steel shells sunk to the required depth through all strata except rock excluding provision of reinforcement as per detailed drawings and design approved by the Engineer-in-charge including placing concrete by tremie arrangements, compaction of concrete and withdrawal of shell etc. complete.	Bd / B-4 Page 270	The work shall be carried out as per the wording of item and as directed by Engr. Incharge
	Testing charges		
171	a) Carrying out Std. consistency, fineness Sp. Gravity, setting time, compressive strength. Soundness on Cement with a frequency of one bag of 50 Kg. out of the 50 tonnes in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results and retesting if required. Including taxes. Overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
172	b) Carrying out Sieve Analysis Water absorption. Specific Gravity, Impact Value. crushing Value on stone aggregates With frequency of 1 test as per 100.00 Cmt. in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
173	c) Carrying out Fineness Modulus (Sieve Analysis) Slit & clay content. Chloride & Sulphate content on on fine aggregates (sand/crushed sand of V.V.S. quality With frequency of 1 test for each source in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
			Engineers of Sub-Division
174	d) Carrying out Water absorption. Compressive Strength, Efflorescence test on Brick With frequency of 1 test (set of 5 bricks) for quality of 50,000 Brick in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
175	e) Carrying out Water absorption. Modulus of Rapture. Determination of Chemical Resistance on ceramic / Vitrified tiles With frequency of 1 test for 2000 tiles in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
176	f) Carrying out Compressive Strength of cement /mortor/micro concrete cubes as per frequency mentioned in I.S.456-2000 in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
177	g) Carrying out Moisture content. Density and Compressive Strength of Teak wood with frequency of 1 test per each source in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
178	h) Carrying out PH Value. Chloride/ Sulphate Content on Water with frequency of 1 test per each source in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
179	i) Carrying out Knife test. Adhesion test & End Immersion test on Flush door with frequency of 1 test per lot in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
180	j) Carrying out Wt. per Running Metre of pipe & wall thickness on PVC Pipe with frequency of 1 test per lot in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
181	k) Carrying out Concrete mix design (with all test on basic materials) as per IS-10262-1982 in Govt. P.W.D. laboratory and submitting mix design for approval of Engineer-in-charge including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
182	l) Carrying out permeability test on Cement concrete cubes in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
183	m) Carrying out crushing value/compressive strength water absorption and specific gravity of Stone/rubble (Including all type of natural stones such as kotah/marble/granite/kadappah etc.) in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
184	n) Carrying out weight per running meter diameter of pipe weight of zinc coating per square meter and wall thickness of pipe on Galvanized iron pipe in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes, overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
185	o) Carrying out thickness mass per running meter and powder coating test on Aluminum section in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes, overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
186	p) Carrying out Tensile strength percentage Elongation, yield Stres. Weight-per Meter. Bend / Rebend, proof stress and nitrol solution Test on Steel bar upto 16mm (set of 3 bars) in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes, overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
187	q) Carrying out Tensile strength percentage Elongation, yield Stres. Weight-per Meter. Bend / Rebend, proof stress and nitrol solution Test on Steel bar above 16mm (set of 3 bars) in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes, overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
188	r) Carrying out resistance to applied Voltage (1Hr. Test) (set of 2 Bars), resistance to applied voltage (30 days test) (set of 2 bars), thickness of coating (set of 2 bars). Chemical Resistance test (set of 8 bars) Hardness of Coating and Salt Spray test (4 cycles) (set of 2 bars) on steel bars in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes, overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division

Item No.	Description	Ref. to Std. Spn. Book Item No and Page	Additional Specification if any
189	s) Carrying out density (set of 3 blocks) Compressive Strength (set of 8 blocks) and Water absorption Test (set of 3 blocks) on hollow/solid blocks in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
190	t) Carrying out Water absorption Test (set of 6 tiles) and Modulus of Rupture (set of 6 tiles) determination of impact resistance and chemical resistance test on Glaze tiles in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division
191	u) Carrying out yield stress, electrical resistance of induction butt welded, Bend test. Tensile strength of Structural Steel as per the instruction of engineer-in-charge in Govt. P.W.D. laboratory as per relevant b.i. standards and submitting test results including taxes. overheads and any other allied charges etc. complete	---	The work shall be carried out as per the wording of item and as directed by Engr. Incharge Change in Laboratory to be approved by S.E. Mumbai (P.W.) circle The testing is to be carried out and result to be field with the Deputy Engineers of Sub-Division

**SECTION – 8**  
**SECURITIES AND OTHER FORMS**

**Letter of Acceptance**

(Letterhead paper of the Employer)

To,

\_\_\_\_\_ [name and address of the Contractor]  
\_\_\_\_\_  
\_\_\_\_\_

Dear Sirs,

This is to notify you that your online bid dated \_\_\_\_\_ for execution of the \_\_\_\_\_ (name of the contract and identification number, as given in the Instructions to Bidders) for the Contract Price of Rupees \_\_\_\_\_ (\_\_\_\_\_ ) (amount in words and figures), as corrected and modified in accordance with the Instructions to Bidders<sup>1</sup> is hereby accepted by our agency.

We accept / do not accept that \_\_\_\_\_ be appointed as the Adjudicator<sup>2</sup>. You are hereby requested to furnish Performance Security, in the form detailed in Para 34.1 of ITB for an amount equivalent to Rs. \_\_\_\_\_ within 07 days of the receipt of the letter of acceptance valid up to 28 days from the date of expiry of defects Liability Period i.e. up to \_\_\_\_\_ and sign the contract, failing which action as stated in Para 34.2 of ITB will be taken.

Yours faithfully,

Authorised Signature  
Name and title of Signatory  
Name of Agency

<sup>1</sup> Delete “Corrected and” or “and modified” if only one of these actions applies. Delete as corrected and modified in accordance with the Instructions to Bidders, if corrections or modifications have not been affected.

<sup>2</sup> To be used only if the contractor disagrees in his Bid with the Adjudicator proposed by the Employer in the “Instructions to Bidders”.

**Issue of Notice to proceed with the work**

(Letter head paper of the Employer)

\_\_\_\_\_ (Date)

To,

\_\_\_\_\_ [name and address of the Contractor]

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Dear Sirs,

Pursuant to your furnishing the requisite security as stipulated in ITB Clause 34.1 and signing of the Contract for the

Bid Price of Rs. \_\_\_\_\_ .

You are hereby instructed to proceed with the execution of the said works in accordance with the documents.

Yours faithfully,

(Signature, name and title of Signatory  
Authorised to sign on behalf of Employer)



**AGREEMENT FORM**

**Agreement**

This agreement, made the \_\_\_\_\_ day of \_\_\_\_\_ between \_\_\_\_\_ (name and address of the Employer) [hereinafter called “the Employer] and \_\_\_\_\_ (name and address of contractor) hereinafter called “the Contractor” of the other part.

Whereas the employer is desirous that the Contractor execute \_\_\_\_\_ (name and identification number of Contractor) (hereinafter called “the Works”) and the Employer has accepted the Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein, at a cost of Rs \_\_\_\_\_

**NOW THIS AGREEMENT WITNESSTH as follows :**

- (1) In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the conditions of contract hereinafter referred to and they shall be deemed to form and be read and construed as part of this Agreement.
- (2) In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to all aspects with the provisions of the contract.
- (3) The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying the defects wherein Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
- (4) The following documents shall be deemed to form and be ready construed as part of this agreement viz.
  - i) Letter of Acceptance
  - ii) Notice to proceed with the works
  - iii) Contractor’s Bid
  - iv) Condition of contract : General and Special
  - v) Contract Date
  - vi) Additional condition
  - vii) Drawings
  - viii) Bill of Quantities and
  - ix) Any other documents listed in the Contract Data as forming part of the Contract.

In witnessed whereof the parties there to have caused this Agreement to be executed the day and year first before written.

The Common Seal of \_\_\_\_\_ was hereunto affixed in the presence of :

Signed, Sealed and Delivered by the said \_\_\_\_\_

in the presence of :

Binding Signature of Employer \_\_\_\_\_

Binding Signature of Contractor \_\_\_\_\_

**UNDERTAKING**

**[Bid Validity Form]**

I, the undersigned do hereby undertake that our firm M/s. \_\_\_\_\_  
\_\_\_\_\_ agree to abide by this bid for a period \_\_\_\_\_ days for the date fixed  
for receiving the same and it shall be binding on us and may be accepted at any time before the expiration of  
that period.

---

(Signed by an Authorized Officer of the Firm)

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Title of Officer

---

Name of Firm

---

DATE

**SECTION – 9**  
**DRAWINGS**

**DOCUMENTS TO BE FURNISHED BY THE BIDDER**  
**(Attached)**

**SECTION – 10**  
**BAR CHART**

**DOCUMENTS TO BE FURNISHED BY THE BIDDER**  
**(Attached)**

**\* END OF THE TENDER DOCUMENT \***