



(PERCENTAGE TENDER)

VOLUME-I

“ e-TENDER”

For

Name of Work : Proposed works to be carried out at Annabhau Sathe Auditorium in campus of V.J.B.Udyan , Byculla on the land bearing CTS No.563(pt).Mazgoan Division in 'E' Ward .

Bid No. : 2024_MCGM_1099150_1

Website: <https://mahatenders.gov.in>

Office of :- Dy. CE. (BC)'s office,
3rd floor, Engineering Hub Building,
Dr. E.Moses Road, Worli Naka,
Worli,Mumbai 400 018

Prepared By :- M/s Shashank Mehendale & Associates,
Plot No.163 –A, Ganga Lahari, Pandurang Naik Marg,
Shivaji Park, Mumbai-400016

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Consultant

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S.E.(B.C.)City

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S.E. Elect.(B.C.)City

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A.E. Elect.(BC)City

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A.E.(BC)City

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E.E.(B.C.)City

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Dy. C.E.(B.C.) City

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E-TENDER NOTICE

BRIHANMUMBAI MUNICIPAL CORPORATION

No.BC/CITY / /Dated-----

E-TENDER NOTICE

Name of Work : Proposed works to be carried out at Annabhau Sathe Auditorium in campus of V.J.B.Udyan , Byculla on the land bearing CTS No.563(pt).Mazgoan Division in 'E' Ward .

The Municipal Corporation of Greater Mumbai (MCGM) invites e-tender to appoint Contractor for the aforementioned work from contractors of repute, multidisciplinary engineering organizations i.e. eminent firm, Proprietary/Partnership Firms/ Private Limited Companies/ Public Limited Companies/Companies registered under the Indian companies' act 2013, the contractors registered with the Municipal Corporation of Greater Mumbai, (MCGM) in Class I(B) & above as per new registration and from the contractors/firms equivalent and superior classes registered in Central or State Government/Semi Govt. Organization/Central or State Public Sector Undertakings, will be allowed subject to condition that, the contractors who are not registered with MCGM will have to apply for registering their firm within three months' time period from the award of contract, otherwise their Bid Security i.e. E.M.D (Earnest Money Deposit) will be forfeited/recovered and an amount equal to Registration Fee of respective class will be recovered as penalty.

Bidding Process will comprise of THREE stages.

The applicant (tenderer) shall note that, the tender scrutiny fee of Rs. 16500 + 18% GST shall be payable immediately after opening of Packet A & B in any of the BMC's Citizen Facilitation Center (CFC's) and receipt of the same shall be submitted on E- mail eebc.city@mcgm.gov.in before opening of Packet 'C'. On noncompliance of the same, the tender scrutiny fee will be recovered from EMD.

The forms of Tender documents are available on the e-Tendering website <https://mahatenders.gov.in> The aspiring Applicants will have to download Tender form, from the website mentioned above. The bidder has to fill in online format and upload information regarding Tender Online. Also he has to download the Tender Application Form from website, fill it and upload the scanned copy of duly filled form, along with required documents.

For purchasing the Tender documents, the bidders will have to get registered with e-tender portal (<https://mahatenders.gov.in>) for the e-tendering process and obtain login credentials to participate in the online Tender process. The details of the same are available on <https://mahatenders.gov.in> . For registration, enrolment for digital signature certificates and user manual, please refer to respective links provided in e-tendering tab on <https://mahatenders.gov.in>

Name and Location of Work	Contract Period	Earnest Money Deposit	Estimated Cost of Project in Lakhs
Proposed works to be carried out at Annabhau Sathe Auditorium in campus of V.J.B.Udyan , Byculla in 'E'Ward on the land bearing CTS No.563(pt).Mazgoan Division in 'E' Ward.	04 Months	Rs. 2.93 lakhs	1. Civil Work :Rs.1,72,17,906/- 2. M & E work :Rs.87,25,144/- 3. LIFT Work :Rs.33,30,429/- Total Cost : Rs. 2,92,73,479/- (excluding 18% GST)

In terms of the 3 stage system of e-tendering, a Bidder will be required to deposit, along with its Bid, an Earnest Money Deposit of Rs. 2.93 Lakhs (Rs. Two Lakhs Ninty Three Thousands only) through payment gateways of GOM on URL <https://mahatenders.gov.in> , refundable in accordance to the relevant clause of bid document, from the Bid Due Date, except in the case of the selected Bidder whose Bid Security/EMD shall be retained.

The Bidders will have to provide Earnest Money Deposit through the payment gateways while submitting the bids. The Bid shall be summarily rejected if it is not accompanied by the Earnest Money Deposit. The e-tender notice is available on NIC Portal <https://mahatenders.gov.in> as mentioned in the Header Data of the tender.

As per THREE Packet systems, the document for Packet 'A' & 'B' is to be uploaded by the bidder in vendors' document online in Packet A, B. Packet 'A', 'B' & 'C' shall be opened on dates as mentioned in header data. All the responsive and eligible bidders if they so wish can be present at the time of bids, in the office of Dy.C.E.(B.C.)City . The Packet 'C' shall be opened if bids submission in Packet 'A' & 'B' satisfies/includes all the requirements and same are found acceptable to the Authority.

The Municipal Commissioner reserves the right to reject all or any of the e- tender(s) without assigning any reasons at any stage. The dates and time for submission and opening the bids are as shown in the Header Data .If there are any changes in the dates the same will be displayed on the Mahatenders Portal. (<https://mahatenders.gov.in>) / HANA

The Applicants interested for the above referred works may contact the Dy.C.E.(B.C.)City at the following address on any working day during office hours.

Office of :- Dy.City Engineer (BC)City

3rd floor,Engg.Hub Building ,Worli ,Mumbai-400018

The applicants may wish to visit the site under reference located at E.S. Patanwala Road

Byculla(E),Mumbai -11 in 'E' Ward and can collect the information of the present status from the department who have invited the bids.

The BMC reserves the rights to accept any of the application or reject any or all the application received for above works, without assigning any reasons thereof. The information regarding above subject matter is available on Website of BMC and Mahatender portal.mcg.gov.in/tenders (<https://mahatenders.gov.in>)

Dy.City Engineer (BC)City

HEADER DATA

Tender Document No	Bid No. : 2024_MCGM_1099150_1
Name of Organization	Brihanmumbai Municipal Corporation
Subject	Proposed works to be carried out at Annabhau Sathe Auditorium in campus of V.J.B.Udyan , Byculla on the land bearing CTS No.563(pt).Mazgoan Division in 'E' Ward .
Cost of Tender	Rs. 16,500 + 18% GST. (shall be payable immediately after opening of Packet A & B in any of the BMC's Citizen Facilitation Center (CFC's) and receipt of the same shall be submitted on E- mail eebc.city@mcmgm.gov.in before opening of Packet 'C'.)
Cost of E-Tender (Estimated Cost)	Rs. 2,92,73,479(Without GST)
Bid Security Deposit/ EMD	Rs 2.93 Lakhs
Date of issue and sale of tender	03/10/2024 from 12:00 PM
Pre-Bid Meeting	10/10/2024 @ 01:00 PM
Last date & time for sale of tender & Receipt of Bid Security Deposit	24/10/2024 upto 15:00 PM
Submission of Packet A, B & Packet C (Online)	24/10/2024 upto 03:00 PM
Pre-Bid Venue	Office of Director (E.S.&P.) MHO ,Annex Building ,3 rd floor, Fort ,Mumbai -400001
Opening of Packet A	On or after 28/10/2024 after 04:00 PM
Opening of Packet B	On or after 28/10/2024 after 04:00 PM
Opening of Packet C	On or after 04/11/2024 after 04:00 PM
Address for communication	Office of the:- Dy. City Engineer (BC) City 3 rd floor, Engg.Hub Building ,Worli,Mumbai-400018
Venue for opening of bid	Online in Dy.City Engineer (BC) City Office.
Contact :	Sub Engineer Shri. Mitke / Shri. Ganesh Bhosale Mobile:9404659145/9820539055 Email Id: aebccity01.ce@mcmgm.gov.in eebccity01.ce@mcmgm.gov.in dycebc.city.ce@mcmgm.gov.in

This tender document is not transferable.

The BMC reserves the rights to accept any of the application or reject any or all the application received for above subject without assigning any reason thereof

Dy.City Engineer (BC) City

SECTION 2

ELIGIBILITY CRITERIA

A) Eligibility Criteria**1.0 For Original and New construction works****1.1 Technical Capacity**

The tenderer(s) in their own name should have satisfactorily executed the work of similar nature MCGM /Semi Govt. /Govt. & Public Sector Organizations during last ten (10) years ending last day of month previous to the one in which bids are invited as a prime Contractor (or as a nominated sub-Contractor, where the subcontract had involved similar nature of work as described in the scope of works in this bid document, provided further that all other qualification criteria are satisfied)

However, the performance certificate/work completion certificate issued by the user during last ten(10) years, must either be in the name of the bidder or his MOU partner / manufacturer. It will be considered for own principal contractor or alongwith his MOU partner for above mentioned works. Such Certificate duly signed by an officer not below the rank of Executive Engineer of the concerned organization shall be uploaded.

A) Civil Work

- a) Three similar completed works each of value not less than 30% of Rs.1.73 Cr.

OR

- b) Two similar completed works each of value not less than 40% of Rs.1.73 Cr.

OR

- c) One similar completed works of value not less than 60% of Rs.1.73 Cr.

AND

The bidder should have experience of carrying out similar works such as “Auditorium Construction / Reconstruction / Repairs / Renovation / Refurbishment works” by it’s own company or its MOU partner

B) Electrical Work

- a) Three similar completed works each of value not less than 30% of Rs. 0.88 Cr.

OR

- b) Two similar completed works each of value not less than 40% of Rs. 0.88 Cr.

OR

- c) One similar completed works of value not less than 60% of Rs. 0.88 Cr.

AND

Lift Work

- a) Three similar completed works each of value not less than 30% of Rs. 0.34 Cr.

OR

- b) Two similar completed works each of value not less than 40% of Rs. 0.34 Cr.

OR

- c) One similar completed works of value not less than 60% of Rs. 0.34 Cr.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at compound rate of 10 % per annum; calculated from the date of completion to the last date of receipt of applications for tenders.

In case of ongoing works to be considered, the bidder must have received payment bills of 80% of the contract sum for the work/works executed last day of month previous to the one in which bids are invited.

1.2. Financial Capacity:

Achieved an average annual financial turnover as certified by 'Chartered Accountant'(in all classes of Civil /M&E works only) equal 30% of the estimated cost of work Including GST in last three (3) financial years immediately preceding the Financial Year in which bids are invited.

- To ascertain this, tenderer(s) shall furnish /upload the financial statement (Audited balance sheet) duly certified by Chartered Accountant.
- The turnover can be enhanced by 10% every year to bring the present level.

1.3 Similar Experience:

For assessing the technical capacity of Regular, Routine and Maintenance works; Similar work shall mean, the bidder should have satisfactory completed the work/s of Auditorium Construction / Reconstruction / Repairs / Renovation / Refurbishment with allied M&E works.

Bid Capacity:

It will be considered for own principal contractor or alongwith his MOU partner for above mentioned works.

The bid capacity of the prospective bidders will be calculated as under: Assessed Available Bid Capacity = $(A * N - B)$

Where,

A = Maximum value of Civil/M&E works executed in any one year (year means Financial year) during the **last five years** (updated to the price level of the Financial year in which bids are received at a rate of 10% per year) taking into account the completed as well as works in progress.

N = Number of years prescribed for completion of the Project/Works, excluding monsoon period, for which these bids are being invited. (E.g. 5 Months = 5/12 year)

B = Value of existing commitments (only allotted works) on the last date of submission of bids as per bidding document and on-going works to be completed during the period of completion of the Project/Works for which these bids are being invited.

Note:

The statement showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be attached along with certificates duly signed by the Engineer-in Charge, not below the rank of an Executive Engineer or equivalent.

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

- ❖ Made misleading or false representation in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
- ❖ Record for poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.

SECTION 3

DISCLAIMER

DISCLAIMER

The information contained in this e-tender document or provided to Applicant(s), whether verbally or in documentary or any other form, by or on behalf of the Brihanmumbai Municipal Corporation (BMC), hereafter also referred as "The Authority", or any of its employees or advisors, is provided to Applicant(s) on the terms and conditions set out in this e-tender and such other terms and conditions subject to which such information is provided.

This e-tender includes statements, which reflect various assumptions and assessments arrived at by the Brihanmumbai Municipal Corporation (BMC) in relation to the Project. Such assumptions, assessments and statements do not purport to contain all the information that each Applicant may require. This e-tender may not be appropriate for all persons, and it is not possible for the Brihanmumbai Municipal Corporation (BMC), its employees or advisors to consider the investment objectives, financial situation and particular needs of each party who reads or uses this e-tender. The assumptions, assessments, statements and information contained in this e-tender may not be complete, accurate, adequate or correct. Each Applicant should therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements and information contained in this e-tender and obtain independent advice from appropriate sources.

Information provided in this e-tender to the Applicant(s) is on a wide range of matters, some of which may depend upon interpretation of law. The information given is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The Brihanmumbai Municipal Corporation (BMC) accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on law expressed here.

The Brihanmumbai Municipal Corporation (BMC), its employees and advisors make no representation or warranty and shall have no liability to any person, including any applicant or Bidder, under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this e-tender or otherwise, including the accuracy, adequacy, correctness, completeness or reliability of the e-tender and any assessment, assumption, statement or information contained therein or deemed to form part of this e-tender or arising in any way with pre-qualification of Applicants for participation

in the Bidding Process. The Brihanmumbai Municipal Corporation (BMC) also accepts no liability of any nature whether resulting from negligence or there wise howsoever caused arising from reliance of any Applicant upon the statements contained in this e-tender.

The Brihanmumbai Municipal Corporation (BMC) may, in its absolute discretion but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this e-tender.

The issue of this e-tender does not imply that the Brihanmumbai Municipal Corporation (BMC) is bound to select and short-list pre-qualified Applications for Bid Stage or to appoint the selected Bidder or Concessionaire, as the case may be, for the Project and the Brihanmumbai Municipal Corporation (BMC) reserves the right to reject all or any of the Applications or Bids without assigning any reasons whatsoever.

The Applicant shall bear all its costs associated with or relating to the preparation and submission of its Application including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by The Brihanmumbai Municipal Corporation (BMC) or any other costs incurred in connection with or relating to its Application. All such costs and expenses will remain with the Applicant and the Brihanmumbai Municipal Corporation (BMC) shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by an Applicant in preparation or submission of the Application, regardless of the conduct or outcome of the Bidding Process.

SECTION 4

INTRODUCTION

INTRODUCTION

1. Background:

The Brihanmumbai Municipal Corporation covers an area of 437.71sq.kms.with a population of **1.24 Crores as per census of 2011**. The metropolis accounts for a major portion of India's international trade and government's revenue, from being one of the foremost centers of education, science and technological research and advancement.

The Mumbai Metropolis has historic tradition of strong civic activism dedicated to the because of a better life for all its citizens. And it's the Brihanmumbai Municipal Corporation (BMC), hereafter called the "corporation", the primary agency responsible for urban governance in Greater Mumbai.

BMC (The Authority) is one of the largest local self-governments in the Asian Continent. In observance of historic traditions of strong civic activism, with the change in time and living conditions to match with the urbanization, BMC has mainly focused in providing almost all kinds of engineering services viz, Hydraulics, storm water drain, sewerage, water supply projects, roads, bridges, solid waste management, and environmental services. Beside this, the BMC is also providing dedicated services in various segments such as Health, Primary Education as well as the construction and maintenance of Public Markets and Slaughterhouses.

BMC is an organization having different departments, right from engineering depts. to health depts. Moreover, we have other departments. like education, market, fire brigade dept., Octroi and other such departments where quite a good number of staff members are working.

2. Scope of Work:

The scope of work in detail is specified in "Section-7" whereas technical details are specified in Section-10" of this tender document, which shall be referred before submitting the offer.

All the quantities mentioned in Technical Specification & Schedule of Quantities i. e. **Section-10**, are indicative & not exhaustive and may change/scaled-up substantially with the sanction of competent authority, based upon the performance of the pilot project, if implemented any. Written consent from the successful bidder, if required/insisted, maybe sought accordingly at that time. However, the Successful bidder should submit his SCHEDULE of quantities as mentioned at section 8.

BMC has proposed to execute the works to be carried out at Annabhau Sathe

Auditorium in campus of V.J.B.Udyan , Byculla in 'E'Ward on the land bearing CTS No.563(pt).Mazgoan Division in 'E' Ward .

The scope for the subject tender involves as per Technical Specifications & scope of work. 1st Category material shall be used.

SECTION 5

E-TENDERING ONLINE SUBMISSION PROCESS

E-TENDERING ONLINE SUBMISSION PROCESS

IMPORTANT NOTICE TO BIDDERS ON e-TENDERING

GOVERNMENT E-PROCUREMENT SYSTEM has successfully rolled out the e-bid submission Tendering System through its web site <https://mahatenders.gov.in> Tenders of various Departments have been uploaded, their bids submitted and the same have been opened on line. Bids for various tenders published in the web site of Government Departments can be submitted online by enrolling with the above mentioned web site.

The bidders can enrol themselves on the website <https://mahatenders.gov.in> using the option “Online Bidder Enrolment”. Possession of a Valid Class III Digital Signature Certificate (DSC) in the form of smart card/e-token in the Company's name is a prerequisite for registration and participating in the bid submission activities through this web site. Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site <https://mahatenders.gov.in> under the link “Information about DSC”.

The web site also has user manuals with detailed guidelines on enrolment and participation in the online bidding process. The user manuals can be downloaded for ready reference. Vendors can also attend the training/familiarization programme on the e-tendering system conducted periodically by the GOVERNMENT E-PROCUREMENT SYSTEM in association with NIC.

Special Instructions to the Contractors/Bidders for the e-submission of the bids online through this eProcurement Portal

1. Bidder should do Online Enrolment in www.mahatenders.gov.in Portal using the option to Enrol available in the Home Page. Then the Digital Signature enrolment has to be done with the e-token, after logging into the portal. The e-token may be obtained from one of the authorized Certifying Authorities such as Mudhra CA/ GNFC/ IDRBT/ Mtnl Trust line/ Safe Script/ TCS.
2. Bidder then logs into the portal giving user id / password chosen during enrolment.
3. The e-token that is registered should be used by the bidder and should not be misused by others.
4. DSC once mapped to an account cannot be remapped to any other account. It can only be Inactivated.
5. 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. This will ensure lesser upload of bid documents.
6. After downloading / getting the tender schedules, the Bidder should go through them carefully and then submit the documents as per the tender document, otherwise, the bid will be rejected.
7. Applicant will upload Packet A documents in cover 1 “Fee” and Packet B related Documents in cover 2 “PQC” respectively.
8. The BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns in the uploaded BOQ, else the bidder is liable to be rejected for that tender. For commercial details (in Packet C) contractors will fill data in financial bid in BOQ and quotes his “(+) or (-) Percentage” (i.e.% quoted) figure..

9. If there are any clarifications, this may be obtained online through the eProcurement Portal, or through the contact details given in the tender document. Bidder should take into account of the corrigendum published before submitting the bids online.
10. Bidder, in advance, should prepare 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.
11. Bidder should arrange for 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 and time for the tender.
12. The bidder reads the terms and conditions and accepts the same to proceed further to submit the bids
13. The bidder has to submit the tender document(s) online well in advance before the prescribed time to avoid any delay or problem during the bid submission process.
14. There is no limit on the size of the file uploaded at the server end. However, the upload is decided on the Memory available at the Client System as well as the Network bandwidth available at the client side at that point of time. In order to reduce the file size, bidders are suggested to scan the documents in 75-100 DPI so that the clarity is maintained and also the size of file also gets reduced. This will help in quick uploading even at very low bandwidth speeds.
15. It is important to note that, **the bidder has to Click on the Freeze Bid Button, to ensure that he/she completes the Bid Submission Process. Bids Which are not Frozen are considered as Incomplete/Invalid bids and are not considered for evaluation purposes.**
16. 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 due to local issues.
17. The bidder may submit the bid documents online mode only, through this portal. Offline documents will not be handled through this system.
18. At the time of freezing the bid, the e-Procurement system will give a successful bid updation message after uploading all the bid documents submitted and 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.
19. After the bid submission, 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 event.
20. Successful bid submission from the system means, the bids as uploaded by the bidder is received and stored in the system. System does not certify for its correctness.
21. 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

22. The time that is displayed from the server clock at the top of the tender Portal, will be valid for all actions of requesting bid submission, bid opening etc., in the e-Procurement portal. The Time followed in this portal is as per Indian Standard Time (IST) which is GMT+5:30. The bidders should adhere to this time during bid submission.
23. All the data being entered by the bidders would be encrypted at the client end, and the software uses PKI encryption techniques to ensure the secrecy of the data. The data entered will not be viewable by unauthorized persons during bid submission and not viewable by any one until the time of bid opening. Overall, the submitted bid documents become readable only after the tender opening by the authorized individual.
24. During transmission of bid document, the confidentiality of the bids is maintained since the data is transferred over secured Socket Layer (SSL) with 256 bit encryption technology. Data encryption of sensitive fields is also done.
25. The bidders are requested to submit the bids through online e-Procurement system to the TIA well before the bid submission end date and time (**as per Server System Clock**).
26. The Municipal Commissioner reserves the right to reject all or any of the e-Tender(s) without assigning any reason at any stage. The dates and time for submission and opening the tenders are as shown in the Header Data. If there are any changes in the dates the same will be displayed on the e-Procurement System of Government of Maharashtra (Mahatenders) (<http://mahatenders.gov.in>).
27. Due to any unforeseen circumstances if any of the date mentioned in the header data is declared as public holiday, in that case all the dates* will get shifted by one day or next working day.
28. BARRING PHYSICAL SUBMISSIONS- As the entire tendering procedure is online process; the physical submission of documents shall not be entertained.
29. The information about DSC, guidelines for bid submission, bidders manual kit, Help for Contractor, FAQ, etc. are available on <https://mahatenders.gov.in>

SECTION 6

INSTRUCTIONS TO APPLICANTS

INSTRUCTIONS TO APPLICANTS

➤ Scope of Application

The Authority wishes to receive Applications for Qualification in order to *SELECT* experienced and capable Applicants for the Bid Stage.

➤ Eligibility of Applicants

The Municipal Corporation of Greater Mumbai (MCGM) invites e-tender to appoint Contractor for the aforementioned work from contractors of repute, multidisciplinary engineering organizations i.e. eminent firm, Proprietary/Partnership Firms/ Private Limited Companies/ Public Limited Companies/Companies registered under the Indian companies' act 2013, the contractors registered with the Municipal Corporation of Greater Mumbai, (MCGM) in in Class I(B) & above as per new registration and from the contractors/firms equivalent and superior classes registered in Central or State Government/Semi Govt. Organization/Central or State Public Sector Undertakings, will be allowed subject to condition that, the contractors who are not registered with MCGM will have to apply for registering their firm within three months' time period from the award of contract, otherwise their Bid Security i.e. E.M.D (Earnest Money Deposit) will be forfeited/recovered and an amount equal to Registration Fee of respective class will be recovered as penalty.

To be eligible for pre-qualification and short-listing, an Applicant shall fulfill the following conditions of eligibility:

1. For Regular, Routine and Maintenance works:

1.1 Technical Capacity

The tenderer(s) in their own name should have satisfactorily executed the work of similar nature MCGM /Semi Govt. /Govt. & Public Sector Organizations during last ten (10) years ending last day of month previous to the one in which bids are invited as a prime Contractor (or as a nominated sub-Contractor, where the subcontract had involved similar nature of work as described in the scope of works in this bid document, provided further that all other qualification criteria are satisfied)

However, the performance certificate/work completion certificate issued by the user during last ten(10) years, must either be in the name of the bidder or his MOU partner / manufacturer. It will be considered for own principal contractor or alongwith his MOU partner for above mentioned works. Such Certificate duly signed by an officer not below the rank of Executive Engineer of the concerned organization shall be uploaded.

A) Civil Work

- d) Three similar completed works each of value not less than 30% of Rs.1.73 Cr.

OR

- e) Two similar completed works each of value not less than 40% of Rs.1.73 Cr.

OR

- f) One similar completed works of value not less than 60% of Rs.1.73 Cr.

AND

The bidder should have experience of carrying out similar works such as “Auditorium Construction / Reconstruction / Repairs / Renovation / Refurbishment works” by it’s own company or its MOU partner

B) Electrical Work

- d) Three similar completed works each of value not less than 30% of Rs. 0.88 Cr.

OR

- e) Two similar completed works each of value not less than 40% of Rs. 0.88 Cr.

OR

- f) One similar completed works of value not less than 60% of Rs. 0.88 Cr.

AND

Lift Work

- d) Three similar completed works each of value not less than 30% of Rs. 0.34 Cr.

OR

- e) Two similar completed works each of value not less than 40% of Rs. 0.34 Cr.

OR

- f) One similar completed works of value not less than 60% of Rs. 0.34 Cr.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at compound rate of 10 % per annum; calculated from the date of completion to the last date of receipt of applications for tenders.

In case of ongoing works to be considered, the bidder must have received payment bills of 80% of the contract sum for the work/works executed last day of month

previous to the one in which bids are invited.

1.2. Financial Capacity:

Achieved an average annual financial turnover as certified by 'Chartered Accountant'(in all classes of Civil /M&E works only) equal 30% of the estimated cost of work Including GST in last three (3) financial years immediately preceding the Financial Year in which bids are invited.

- To ascertain this, tenderer(s) shall furnish /upload the financial statement (Audited balance sheet) duly certified by Chartered Accountant.
- The turnover can be enhanced by 10% every year to bring the present level.

1.3 Similar Experience:

For assessing the technical capacity of Regular, Routine and Maintenance works; Similar work shall mean, the bidder should have satisfactory completed the work/s of Auditorium Construction / Reconstruction / Repairs / Renovation / Refurbishment with allied M&E works.

C) Bid Capacity:

It will be considered for own principal contractor or alongwith his MOU partner for above mentioned works.

The bid capacity of the prospective bidders will be calculated as under: Assessed Available BidCapacity = $(A * N * 2 - B)$

Where,

A = Maximum value of Civil/M&E works executed in any one year (year means Financial year) during the last five years (updated to the price level of the Financial year in which bids are received at a rate of 10% per year) taking into account the completed as well as works in progress.

N = Number of years prescribed for completion of the Project/Works, excluding monsoon period, for which these bids are being invited. (E.g. 5 Months = 5/12 year) For every intervening monsoon 0.33 shall be added to N.

B = Value of existing commitments (only allotted works) on the last date of submission of bids as per bidding document and on-going works to be completed during the period of completion of the Project/Works for which these bids are being invited.

Note:

The statement showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be attached

along with certificates duly signed by the Engineer-in Charge, not below the rank of an Executive Engineer or equivalent.

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

- ❖ Made misleading or false representation in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
- ❖ Record for poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.

FOR “MECHANICAL & ELECTRICAL ENGINEERING CLASS

Sr.No.	Class	Amounts up to which works can be taken up (Rs in lakhs)
1.	A	Without Limit
2.	B	25
3.	B-1	15
4.	C	10
5.	D	7.5
6.	E	2

D)Equipment Capabilities as required for this work

- a. **New and Original Works:** The bidder should, undertake their own studies and furnish with their bid, a detailed construction planning and methodology supported with assessment study of requirements of equipment/plants & machineries to allow the employer to review their proposal. The bidder will ensure his commitment to make the arrangements of the required equipment on the day of commencement or with respect to the progress of the work in phases, as per the instructions of site in charge on an undertaking on Rs.500 stamp paper to be submitted along with the Bid in Packet B. However, this condition in no way shall dilute the respective condition in Registration Rules of BMC.
- b. **Special Works:** The concerned Eng. shall enlist the equipment's in the tender document justified for the project and ensure the capacity of the bidder for the same with the approval of concerned AMC.

Note:

- i. Bidders shall submit the undertaking for equipment capability and other undertakings assuch on a single Rs. 500.00 stamp paper.
- ii. Insistence of availability of equipment's/plants at a particular distance from site shouldnot be made in the tender document.

E) Technical Personnel

The contractor and/or its managerial staff should have qualification/experience appropriate to the function they fulfill. The minimum standard shall be increased by asking that at least one number or more of the contractor or its managerial staff have acquired qualifications or work experience to the needs of the contract. The minimum standard may also state that the person or persons responsible for managing the works must have a minimum of no's of years' experience working on similar nature of projects

For fixing requirement of Technical Staff as required for this work.**(B) General Guidelines for Fixing Requirement of Technical Staff.**

Cost of work (Rs in Crore)	Requirement of Technical Staff		Minimum Experience (year)	Designation
	Qualification	Number		
1.5 to 5	i) Graduate Engineer	1	05	Principal Technical Representative
	iii) Graduate Engineer or Diploma Engineer	1 1	02 05	

Notes-

- 1 "Cost of work", in table above, shall mean the agreement amount of the work.
2. Rate of recovery in case of non-compliance of the clause be stipulated at following rates

Sr. No.	Qualification	Experience(years)	Rate of Recovery
1	Project Manager with Degree	10	Rs.30000/-p.m.
2	Graduate Engineer	5	Rs.25000/-p.m.
3	Graduate Engineer	2	Rs.15000/-p.m.
4	Diploma Engineer	5	Rs.15000/-p.m.

3. Nothing extra need to be added while preparing market rate justified amount of the work if stipulation is made as per above recommended scale of technical staff.
4. Requirement of technical staff and their experience can be varied depending upon nature of work by competent authority i.e. Chief Engineer with recorded reasons.

F) TIME PERIOD OF THE PROJECT:

The total time period of project is 04(Four) months from the date of award of contract.

The time allowed for carrying out the work as entered in the Tender shall be strictly observed by the Contractor and shall be reckoned from the date on which the Letter of Acceptance is given to the Contractor. The work shall throughout the stipulated period of the Contract be proceeded with all due diligence as time being deemed to be the essence of the contract on the part of the Contractor. On failing to do so, the Contractor shall pay as compensation an amount which shall

be governed as per Clause - 8(e) of Standard General Conditions of Contract.

The Contractor should complete the SITC of this work as per phase given below:

¼ of the work in	½ of the time
½ of the work in	⅔ of the time
¾ of the work in	¾ of the time
Full of the work in	Full of the time

Full work will be completed in Four (4) months.

The programme for completion of work shall be a part of the Contract Document in the form of Bar Chart / Gantt Chart. The Contractor is supposed to carry out the work and keep the progress as per Bar Chart/Gantt Chart. The Contractor shall complete the work as per the Schedule given in the Contract and the programme submitted by the Contractor.

G) Contract Execution

All required documents for execution of the contract shall be submitted within 30 days from the date of issue of letter of acceptance. If the documents are not submitted within the stipulated time, a penalty of **Rs 5,000/-** per day will be applicable to the contractor. All contract documents need to be duly affixed with stamp duty properly signed along with evidence/proof of payment of security/contract deposit/ within 30 days from the date of letter of acceptance received by him

H) If the amount of the Contract Deposit to be paid above is not paid within 30 days from the date of issue of Letter of Acceptance, the Tender / Contractor already accepted shall be considered as cancelled and legal steps be taken against the contractor for recovery of the amounts.

D) The amount of Security Deposit retained by the BMC 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 the rectification work within the period up to which the contractor has agreed to maintain the work in good order, the amount of security deposit retained by BMC shall be adjusted towards the excess cost incurred by the Department on rectification work.

J) Action when whole of security deposit is forfeited:

In any case in which under any Clause of this contract, the contractor shall have rendered himself liable to pay compensation amounting to the whole of this security deposit whether paid in one sum or deducted by instalments or in the case of abandonment of the work owing to serious illness or death of the contractor or any other cause, the Engineer on behalf of the Municipal Commissioner shall have power to adopt any of the following process,

as he may deem best suited to the interest of BMC -

- a. To rescind the contract (for which recession notice in writing to the contractor under the head of Executive Engineer shall be conclusive evidence) and in that case, the security deposit of the contract shall stand forfeited and be absolutely at the disposal of BMC.
- b. To carry out the work or any part of the work departmentally debiting the contractor with the cost of the work, expenditure incurred on tools and plant, and charges on additional supervisory staff including the cost of work- charged establishment employed for getting the un-executed part of the work completed and crediting him with the value of the work done departmentally in all respects in the same manner and at the same rates as if it had been carried out by the contractor under the terms of his contract. The certificate of the Executive Engineer as to the costs and other allied expenses so incurred and as to the value of the work so done departmentally shall be final and conclusive against the contractor.
- c. To order that the work of the contractor be measured up and to take such part thereof as shall be un-executed out of his hands, and to give it to another contractor to complete, in which case all expenses incurred on advertisement for fixing a new contracting agency, additional supervisory staff including the cost of work charged establishment and the cost of the work executed by the new contract agency will be debited to the contractor and the value of the work done or executed through the new contractor shall be credited to the contractor in all respects and in the same manner and at the same rates as if it had been carried out by the contractor under the terms of his contract. The certificate of the Executive Engineer as to all the cost of the work and other expenses incurred as aforesaid for or in getting the un- executed work done by the new contractor and as to the value of the work so done shall be final and conclusive against the contractor.

In case the contract shall be rescinded under Clause (a) above, the contractor shall not be entitled to recover or be paid any sum for any work therefore actually performed by him under this contract unless and until the Executive Engineer shall have certified in writing the performance of such work and the amount payable to him in respect thereof and he shall only be entitled to

be paid the amount so certified. In the event of either of the courses referred to in Clause (b) or (c) being adopted and the cost of the work executed departmentally or through a new contractor and other allied expenses exceeding the value of such work credited to the contractor's amount of excess shall be deducted from any money due to the contractor, by BMC under the contract or otherwise, howsoever, or from his security deposit or the sale proceeds thereof provided, however, the contractor shall have no claim against BMC even if the certified value of the work done departmentally or through a new contractor exceeds the certified cost of such work and allied expenses, provided always that whichever of the three courses mentioned in clauses (a), (b) or (c) is adopted by the Executive Engineer, the contractor shall have no claim to compensation for any loss

sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advance on account of or with a view to the execution of the work or the performance of the contract.

K) Contract may be rescinded and security deposit forfeited for bribing a public officer or if contractor becomes insolvent

If the contractor assigns or sublets his contracts or attempts so to do, or becomes insolvent or commences any proceeding to get himself adjudicated and insolvent or makes any composition with his creditors, or attempts so to do or if bribe, gratuity, gift, loan, perquisite, reward or advantage, pecuniary or otherwise, shall either directly or indirectly be given, promised or offered by the contractor or any of his servants or agents through any public officer, or person in the employ of BMC/Govt. in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract the Engineer In-charge may thereupon, by notice in writing rescind the contract and the Security Deposit of the Contractor shall thereupon stand forfeited and be absolutely at the disposal of BMC and the same consequences shall ensue as if the contract had been rescinded under above clause J hereof; and in addition the contractor shall not be entitled to recover or be paid for any work therefore actually performed under the contract.

General Instructions :-

1. Tenderers are requested to visit the site and verify the site conditions, nature and quantum of work before submitting the tenders.
2. The tender will be accepted only on the percentage basis, otherwise the tender will be straight away rejected.

3. The successful tenderer will have to execute a written contract on the standard form of certificate is produced along with the tender.
4. The rates quoted shall be firm and no variation will be allowed on any account.
5. For subject work USOR-2023 and GCC-2016 are applicable.
6. It is mandatory for the contractors to open a Bank Account in any of the banks approved by BMC for easy and quick payments. All payments under the contract will be made only on this Bank Account through Electronic Clearing System/ RTGS/ NEFT/ CBS
7. Insurance :
Before commencing execution of work, contractor should ensure at his cost against any damage, loss or injury that may occur to any property including any of their personal and employee of Municipal Corporation by an arising of contract.
8. All insurances to be effected by the successful tenderer shall be taken up with the Director of Insurance, Maharashtra State only.
9. The tenderer shall furnish the names & qualifications of the staff who will be deputed on this work and the names of other officers with their telephone Nos. with whom MCGM Engineer may require to get in touch with. The site engineer must have MCGM Supervisor License and the copy of license have to be submitted in Dy.C.E.(B.C.) City's office before commencing the work.
10. Circular u/no CA/F/Proj./28 Dated 28.03.2023 is applicable.
11. The Municipal Commissioner does not bind himself to accept the lowest or any tender.
12. The successful tenderer shall have to furnish a free maintenance guarantee on Rs.500/- stamp paper for 12 calendar months from the date of completion of the work for any manufacturing defects and / or faulty workmanship. If any defect is noticed within the guarantee period and on intimation to the contractors, they will rectify the same free of cost.
13. The tenderer shall indemnify and keep indemnified the MCGM against all damages or compensation payable by law in respect or in consequence, if any, accident or injury to any workman or any other person, woman in employment of the contractor or any other sub-contractor against all claims.
14. Income-Tax Clearance Certificate in original shall be submitted as and when demanded.
15. The percentage quoted shall include the cost of any unforeseen item of work connected with the work in question required for the proper execution of the work.
16. Tenderer / contractor shall note that first class quality of material and workmanship is expected.
17. The materials used shall confirm to the related ISI specifications as well as MCGM specified specification wherever applicable. Directives of Engineer concerned will be binding.
18. General notes in the U.S.O.R. schedule are applicable to all items of this work.

19. The tenderer / contractor will have to make good, without any extra payment any damage or loss to the Municipal property while executing the work.
20. The sequence of work shall be as approved and directed by Engineer-in-charge before starting the work, the contractor shall submit his programme of carrying out the work for approval of Engineer - in - charge.
21. Civil contractors will have to appoint reputed registered electrical sub-contractors for the electrical work, who have proven capability and good past performance.
22. Contractor will have to make their own arrangement for getting the electric supply on site for fabrication and allied works at their own cost.
23. The contractor shall intimate the concerned authorities before starting the work and execute the work priority fixed by the Engineer-in-charge. The inventory of serviceable and unserviceable material must be taken jointly with Site-in-charge (Sub-Engineer) before starting of work.
24. Wherever necessary as directed by Engineer-in-charge, the unserviceable materials will have to be removed from the site within the time period as directed. The serviceable material should be handed over to concerned Assistant Commissioner Ward or user of the Ward.
25. The Corporation will not be responsible for any delay that may be caused due to unforeseen circumstances and no compensation on this account will be paid.
26. While excavating the trenches for foundation utmost care shall be taken that the foundation of adjoining structures will not be disturbed.
27. Materials brought on the site or debris will not be allowed to be stacked in passages or in the car park area.
28. After completion of the waterproofing work, the leakage test shall be carried out after impounding the water and plugging the openings at least for ten days, without any extra cost.
29. Plumbing and sanitary works will have to be carried out through licensed plumber. All plumbing lines will be provided 2" away from wall with spaces as directed. The horizontal and vertical lines should be in line & level.
30. Notwithstanding the source, the sand shall be washed using electrically operated sand washing machine, before use.
31. Reinforcement bars shall be purchased from such manufacturer's or their authorized dealers who manufacture the steel with the basic process. The steel bars shall be embossed with manufacturer's name. Original manufacturer's test certificate shall be insisted for reinforcement bars in the form of half embossed and half printed. Test certificate in photocopy or other form will not be accepted. Engineer's decision regarding make of the steel will be final and binding on the contractors.
32. City Engineer reserves the right to delete any item, alter / reduce the scope of the work, no extra claim in this respect will be allowed.

33. In case of any discrepancy between the plans and B.O.Q. items, item as per B.O.Q. shall prevail and nothing extra shall be paid.
34. No extra payment will be made for the works like scaffolding & centering. Only double scaffolding will be allowed.
35. The articles should be manufactured within the Greater Mumbai limit to facilitate inspection of the articles.
36. Staircase will not be allowed for transport of materials and contractor will have to provide mechanical lift or pulley at their own cost. No extra payment will be made for this arrangement.
37. The contractor shall take photographs of the work site before commencing, during execution and after completion of work, as directed.
38. The contractor shall have to arrange to carry out the work during night time also as per urgency of the work, at no extra cost.
39. After completion of the proposed work, the tenderer/ contractor will have to hand over the site in neat and clean condition for which no extra payment will be made.
40. On receipt of the work order the contractor will have to erect ready-made site Chowky and Godown in form of porta cabin/container cabin. Before erecting the Chowky and Godown, he shall have to obtain permission from the concerned Assistant Commissioner and the Assistant Commissioner shall approve the site of the Chowky and Godown proposed by the Engineer or may allot another suitable site. The porta cabin/ container shall preferably ad measure 12.20 m x 2.50 m with two doors and proper ventilation. It should have toilet facility.
41. The contractor have to provide for site office as per requirement either on his/ her owned place or rented/ leased place. Cost for this may be charged to MCGM by incorporating in the offer. No separate payment may be made for providing the chowky and ancillary items. No permission and space for site chowky will be given / provided on Municipal road/ footpath. The contractor have to make their own arrangement on hire/ lease for site office.
42. The noise level shall be maintained within the permissible limit in Silence Zone area during the construction activities by the Contractors as per the notification dated 14-02-2000 issued by the Ministry of Environment and Forests.
43. Municipal Corporation of Greater Mumbai do not have site available for disposal of Debris / Demolition material / excavated earth. The Contractor shall dispose these materials properly at his own risk & cost. The contractor shall quote the tender keeping these in mind. No separate payment shall be made for disposal of these Debris / Demolition material / excavated earth.
44. The Tenderers shall specify the name of the electrical contractor while submitting the tender and separate sub-contractor status should be accorded to them in the contract.
45. The tenderer shall submit the information in respect of contractors, works on daily wages, part time workers, full time workers, employed for the contract work, time to time during the execution of work to the Labour Office of the MCGM and Govt.authorities i.e. Assistant

Commissioner, Provident Fund regional officer, Mumbai through Dy.C.E.(B.C.) City/E.S./W.S.

46. Tenderer shall pay building & other building worker welfare cess @ 1% of construction cost as per Maharashtra State building & other building welfare cess act 1996 to the M.C.G.M. in consultation with C.A.(finance)
47. It is mandatory for the contractor to maintain the Noise level during the construction activity within the permissible limits as prescribed by MCGM as per circular under no. CE/PD/7788/I dt. 05/11/2008.
48. All necessary approval/correspondence/ regarding commissioning of auditorium shall be made by contractors before handing over of work. Also charges for the same shall be borne by the contractor.
49. All necessary records such as progress of work, cement variation, cement register, steel register, Poding register etc. required for Vigilance/ Audit verification shall be maintained by contractor and verified by Site-in charge/Competent Authorities.
50. Contractor shall provide/ maintain staff & provide adequate training to BMC User department after completion of the work, for operations of all the activities equipments, stage lighting & stage craft, Auditorium sound system & allied systems etc.and other required for smooth functioning of the Auditorium. No extra payment will be made for this arrangement.
51. **Other special contract conditions for electrical works**
 - i. Electrical work shall be carried out in accordance with Technical specifications of USOR-2023 Schedule. Contractor is bound to execute the works as per specifications mentioned. The Main contractor shall execute the work of Audio, stage lighting work” through agency who has experience in it and who has carried out minimum one work executed in the last three financial years.
 - ii. The Auditorium work is special work requires expertise and experience in this field. This special expertise will not be paid by BMC. Hence bidders shall submit the details of agencies from whom they are going to carry out the work with qualification criteria as follows:
 - iii. The contractor should have executed at least one work of **Auditorium** for amount not less than 20% of the value of total electrical work involved in this project. Such type of Auditorium work should have been carried out for BMC /Govt/Semi Govt/Public Sector undertakings.
 - iv. The electrical contractor should have valid Maharashtra PWD license. The successful bidder

shall appoint Consultant for preparation of drawings and design for Acoustic, electrical, works etc. such appointed consultant by the electrical contractor shall prepare the entire scheme, get it approved from MCGM;s Engineer,co-ordinate with all the agencies related with the work , supervise the day to day work and submit the final commissioning report after the execution of the work.

- v. The electrical contractor, however, will be solely responsible for final output and up to the mark performance of the entire Audio Visual 3D system. If due to any reason the performance is not up to the mark, the contractor should make necessary changes / alterations in the system at his own cost so as to achieve the best result as required. It will be the prime duty of the appointed contractor/ consultant to select the acoustic treatment in the auditorium that matches the AV system selected for Auditorium.
- vi. DEFECT LIABILITY PERIOD(DLP)/GUARANTEE PERIOD FOR ELECTRICAL MECHANICAL WORK.: The DLP of elect./Mech. work will be of 1Year from successful testing and commissioning of the works. For lift 3 years DLP
- vii. After completion of work electrical contractor shall be submit single line diagram, quantities of items used, their approved make installed at site, earth tests report, list of supervisors, wireman, electrician who have worked at site with their electrical PWD license number.
- viii. The tenderer shall take proper care while carrying out temporary electrical work / repairs work of existing cabins / offices regarding electrical switch gears & fittings / fixtures, wiring, cabling etc, or in shifting work. All safety precautions shall be taken to avoid any mishap, theft & to have continuous supply on site. Necessary co-ordination with user department shall be made.
- ix. Tenderer shall take care to mark the cable termination before dismantling the existing Panel , DB's and prepare SLD of existing system for further reconnection /termination /replacement /extension if any required to rectify as per scope.

- x. Tenderer shall arrange to sound system experts & installation team to carry out defined scope in the tender to reinstate the system for better performance.
- xi. Tenderer shall arrange to stage lighting system experts & as well as provide the stage lighting material / items from previous make OEM /equivalent make to match the existing system to get required result . Contractor shall take care to get material available in minimum time of so that installation team can be carry out defined scope in the tender to reinstate the system.
- xii. Tenderer shall add on the exiting CCTV system by providing additional camera's & display units with necessary cabling work.
- xiii. Contractor shall provide additional fabricated gate from E.S.Patnwala road to provide direct entry to material on stage area during drama/ shows .
- xiv. All statutory requirement compliance regarding NOC's shall be sole responsibility of bidder.
- xv. If necessary contractor shall remove and re-fix the exiting auditorium chairs while providing cup lock scaffolding without any damage.

➤ **Submission of Tenders****PACKET - A**

The Packet 'A' shall contain scanned certified copies of the following documents
Scrutiny of this packet will be done strictly with reference to only the scanned copies of Documents uploaded online in packet 'A'

- a) Valid Registration Certificate.
- b) **Valid Bank Solvency Certificate** of Minimum Solvency amount as governed by Registration Rule in force for respective Class of contractor for civil and M&E works.

Class	Amount up to which work can be taken(Civil)	Amount of Solvency Certificate in Rs.
I(A)	Without Limit	150 Lakhs

- c) A document in support of Registration under Maharashtra GST Act. Sales Tax Registration Certificate in Maharashtra (or equivalent requirement under VAT). Those not registered in Maharashtra shall submit an undertaking to the effect that if they are successful tenderer, they shall submit Sales Tax Registration Certificate in Maharashtra within 15 days of issue of work order, failing which payment for the work executed will not be released.
- d) Certified copies of valid 'PAN' documents and photographs of the individuals, owners, Karta of Hindu Undivided Family, firms, private limited companies, registered co-operative societies, partners of partnership firms and at least two Directors, if number of Directors are more than two in case of Private Limited Companies, as the case may be. However, in case of Public Limited companies, Semi Government Undertakings, Government Undertakings, no 'PAN' documents will be insisted.
- e) Latest Partnership Deed in case of Partnership firm/Pvt ltd Company duly registered with Chief Accountant (Treasury) of BMC.

The bidders shall categorically provide their Email-ID in packet 'A'.

- f) Form of tender to be uploaded by the tenderer as per the attached format.

Note:

- If the tenderer(s) withdraw tender offer during the tender validity period, his entire E.M.D shall be forfeited.

- If it is found that the tenderer has not submitted required documents in Packet “A” then, the shortfalls of documents will be communicated to the tenderer through e-mail only and compliance required to be made within a time period of three working days otherwise they will be treated as non-responsive.
- If the shortfalls are more than 02, then 10% EMD for each shortfall beyond 2 shortfalls will be recovered from the bidder. This is applicable for Packet A and Packet B separately.
- Tenderers shall visit the site sufficiently in advance of the date fixed for submission of the tender. The tenderer shall be deemed to have full knowledge of all the relevant documents, samples, site, etc. whether they inspect it or not.
- Tenderers are requested to note the units for various items carefully before quoting the rates.

PACKET - B

The Packet 'B' shall contain scanned certified copies of the following documents -

- a) The list of similar type of works as stated in para 'A' of Post qualification successfully completed during the last five years in prescribed proforma, in the role of prime contractor. Information furnished in the prescribed proforma (Proforma-I, III) shall be supported by the certificate duly self-attested. Documents stating that it has successfully completed during the last five years at least one contract of similar works as stated in para 'A' of Post qualification.
- b) Annual financial turnover for preceding three financial years as certified by Chartered Accountant preceding the Financial Year in which bids are invited. Copies of Applicants duly audited balance sheet and profit and loss account for the preceding three financial years preceding the Financial Year in which bids are invited. (Proforma - II)
- c) Documents stating that, it has access to or has available liquid assets, unencumbered assets, lines of credit and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements for the subject contract in the event of stoppage, start-up, or other delay in payment, of the minimum 15% of the cost of the work tendered for, net of the tenderer's commitment of other contracts (Certificate from Bankers / C.A. / Financial Institution shall be accepted as a evidence).
- d) The bidder shall give undertaking on Rs.500/- stamp paper that it is his/their sole responsibility to arrange the required machineries either owned/on lease or hire basis, at site before start of the work
 - i) **New and Original Works:** The bidder should, undertake their own studies and furnish with their bid, a detailed construction planning and methodology supported with assessment study of requirements of equipment/plants & machineries to allow the employer to review their proposal. The bidder will ensure his commitment to make the arrangements of the required equipment on the day of commencement or with respect to the progress of the work in phases, as per the instructions of site in charge on an undertaking on Rs.500 stamp paper to be submitted along with the Bid in Packet B. However, this condition in no way shall dilute the respective condition in Registration Rules of BMC.
 - ii) Details of works in hand (Proforma VI-A & VI-B) (original), along with copies of work orders & attested copies of percentage of works completed or part thereof.

- iii) Statement showing assessed available Bid Capacity.
- iv) The individual undertaking of Rs.500/- stamp paper as per the proforma annexed in 'Annexure B, C & E'
- v) Bidder should have his valid Electrical Contractor license and upload the same.

Note: Bidders shall submit the undertaking for equipment capability and other undertakings assuch on a single Rs.500/- stamp paper.

- vi) **Details of Litigation History-** If there is no Litigation History, the bidder shall specifically mention that there is no Litigation History against him as per the clause of Litigation History (Proforma - VII). In case there is Litigation History - LitigationHistory must cover – Any action of blacklisting, debarring, banning, suspension, deregistration and cheating with BMC, State Govt., Central Govt. or any authority under State or Central Govt./Govt. Organization initiated against the company, firm, directors, partners or authorized signatory shall be disclosed for last 5 years from the date of submission of bid. Also, bidder must disclose the litigation history for last 5 years from the date of submission of bid about any action like show cause issued, blacklisting, debarring, banning, suspension, deregistration and cheating with BMC and BMC is party in the litigation against the company, firm, directors, partners or authorized signatory for carrying out any work for BMC by any authority of BMC andthe orders passed by the competent authority or by any Court where BMC is a party. While taking decision on litigation history, the concerned Chief Engineer or D.M.C Or Director, as may be the case, should consider the details submitted by bidder and take decision based on the gravity of the litigation and the adverse effect of the act of company, firm, directors, partners or authorized signatory on the BMC works which can spoil the quality, output, delivery of any goods or any work execution and withinthe time frame.
- vii) Genuineness of the papers/ documents/ certificates/ declaration submitted with bid is the responsibility of the bidder. If at any stage it is found that the papers / documents / certificates / declaration / mandatory data sheets/schedules/design and layout submitted by the bidder (if authorized dealer/ distributor / agent/contractor, then about his manufacturer/s also) are not in order, are forged, manipulated, fabricated or altered, the bid or purchase order issued to the bidder is liable to be cancelled and further necessary action including forfeiture of its EMD/Security Deposit, debarring/blacklisting against the bidder will be taken. Purchaser may also initiate police/legal action and request

concerned statutory authority for cancellation of license issued to supplier for tendered items.

viii) The tenderers shall upload work plan as per the following outline:

1. GANTT chart/ PERT/ CPM chart showing the completion of work within prescribed time period, considering major activities.
2. Organizational set up envisaged by the contractors.
3. Plant & equipment proposed to be deployed for this work.
4. Site Offices and Laboratories proposed to be set up.
5. A note on how the whole work will be carried out (work plan including methodology).
6. Quality management plan.
7. All the activities included in the Scope of Work shall be covered in the work plan.
8. Authorisation letter from OEM's as per given format.
9. Glass elevator Lift Data Sheets.
10. Site Survey report

ix) **Note:**

- i) The successful bidder shall submit valid registration certificate under E.S.I.C., Act 1948, if the tenderer has more than 10 employees /persons on his establishment (in case of production by use of energy) and 20 employees/persons on his establishment (in case of production without use of energy) to BMC as and when demanded. In case of less employees/persons mentioned above then the successful bidder has to submit an undertaking to that effect on Rs.200/- stamp paper as per circular u/no. CA/FRD/I/65 of 30.03.2013.
- ii) The successful bidder shall submit valid registration certificate under E.P.F. & M.P., Act 1952, if tenderer has more than 20 employees/persons on his establishment, to BMC as and when demanded. In case if the successful bidder has less employees/persons mentioned above then the successful bidder has to submit an undertaking to that effect on Rs.200/- stamp paper as per circular u/no. CA/FRD/I/44 of 04.01.2013.
- iii) The Electrical / Mechanical work shall be got carried out by the civil contractors through the contractors registered with MCGM. in Electrical Category. Information about the registered contractors shall be obtained from the office of the Ch.E. (M&E)/ E.E. (Monitoring & Registration Cell). Attested scanned copy of the valid registration certificate in Electrical Category shall be uploaded with the tender along with the undertaking from the registered Electrical Contractor

stating his willingness to carry out the tender work.

iv) Lift data sheet & OEM authorization letter in given format to be provided.

Note: - If it is found that the tenderer has not submitted required documents in Packet “B” then, the shortfalls will be communicated to the tenderer through e-mail only and compliance required to be made within a time period of **three working days** otherwise they will be treated as non-responsive.

PACKET - C

- a) Online tender filled in either percentage plus or minus (above or below), or at par. (There is no separate provision to quote % in physical form, this is a part in Header Data of online Tendering). For Packet ‘C’ tenderer(s) will fill data in ‘Item Data Tab’ in Service Line Item via Details and quotes his percentage variation figures. **(If entered ‘0’ it will be treated as ‘at par’**. By default the value is zero only).
- b) The tenderer has to quote his final costs for items mentioned in BOQ given in section 8 :
- c) In case of quoted cost by the tender is 15% lower OR above 15% premium than the estimated cost, the rate analysis of major items shall be submitted by L1 and L2 bidder after demand notification by e-mail to bidders by concerned EX.ENG/A.E(BC)City the format for rate analysis is annexed at Annexure ‘D.’

BID SECURITY OR EMD

- The Bidder shall furnish, as part of the Bid, Bid Security/EMD, in the amount specified in the Bid Data Sheet. This bid security shall be in favour of the authority mentioned in the Bid Data Sheet and shall be valid till the validity of the bid.
 - The tenderers shall pay the EMD online instead paying the EMD at any of the CFC centers in BMC Ward Offices.
 - Any bid not accompanied by an acceptable Bid Security and not secured as indicated in sub-clause mentioned above, shall be rejected by the Employer as non-responsive.
 - The Bid Security/EMD of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required Security Deposits.
 - The Bid Security/ EMD and ASD of L-2 and other higher bidders (L-3, L-4 etc .) shall be refunded immediately after opening of financial bid.
 - In case, the successful bidder becomes non-responsive or successful bidder withdraws the bid or is unwilling to extend the bid validity period, in such circumstances, if L-2 bidder is agreeable to extend the bid validity period and ready to deposit the requisite amount of bid security/EMD and ASD to the department within the stipulated time period i.e 15 days, the department will process further as per normal procedure.
 - The Bid Security may be forfeited:
 - a) if the Bidder withdraws the Bid after bid opening (opening of technical qualification part of the bid during the period of Bid validity;
 - b) in the case of a successful Bidder, if the Bidder fails within the specified time limit to:
 - i. sign the Agreement; and/or
 - ii. Furnish the required Security Deposits.
1. The cases wherein if the shortfalls are not complied by a contractor, will be informed to registration and Monitoring Cell. Such non-submission of documents will be considered as 'Intentional Avoidance' and if three or more cases in 12 months are reported, shall be viewed seriously and disciplinary action against the defaulters such as banning/de-registration, etc. shall be taken by the registration cell with due approval of the concerned AMC.
 2. No rejections and forfeiture shall be done in case of curable defects. For non-curable

defects and failure to submit the sample and non-payment of testing charges within the stipulated time period or test reports not conforming to BMC requirements the 10% of EMD shall be forfeited and bid will be liable for rejection.

Note:

i) **Curable Defect shall mean shortfalls in submission such as:**

a) Non-submission of following documents,

i. Valid Registration Certificate

ii. Valid Bank Solvency

iii. GST Registration Certificate (GST)

iv. Certified Copies of PAN documents and photographs of individuals, owners, partners, directors etc.

v. Registered Partnership Deed with Chief Accountant (Treasury) of BMC

vi. Undertakings as mentioned in the tender document.

vii. Details of Litigation History.

viii. Copy of acknowledgement of site survey.

ii) **Non-curable Defect shall mean**

a) In-adequate submission of EMD/ASD amount.

b) In-adequacy of technical or financial capacity with respect to Eligibility criteria as stipulated in the tender.

c) Wrong calculation of Bid capacity.

Note:

Internal grievance redressal mechanism will be governed as per circular no. Ch.E(V)/436/B dtd. 18.05.2023.

BID VALIDITY

- Bids shall remain valid for a period of not less than one eighty (180) days after the deadline date for bid submission specified in Bid Data Sheet. A bid valid for a shorter period shall be rejected by the Employer as non-responsive.
- 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 bidders' 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, but will be required to extend the validity of his bid security for a period of the extension.

DEFECT LIABILITY PERIOD

- The Contractor is expected to carry out the construction work in Workmen like manner so as to meet the requirement and specification for the project. It is expected that the Workmanship and materials will be reasonably fit for the purpose for which they are required.
- Defects or defective work is where standard and quality of workmanship and materials as specified in the contract is deficient. Defect is defined as a failure of the completed project to satisfy the express or implied quality or quantity obligations of the construction contract. Defective construction works are as the works which fail short of complying with the express descriptions or requirements of the contract, especially any drawings or specifications with any implied terms and conditions as to its quality, workmanship, durability, aesthetic, performance or design. Defects in construction projects are attributable to various reasons.
- Some of the defects are structural defects resulting in cracks or collapse of faulty defective plumbing, inadequate or faulty drainage system, inadequate or faulty ventilation, cooling or heating systems, inadequate fire systems etc. The defects could be various on account of different reasons for the variety of the projects.
- The Engineering In charge/Project Officer shall issue the practical completion certificate for the project. During the Defect Liability Period which commences on completion of the work, the Engineering In charge shall inform or the contractor is expected to be informed of any defective works by the Employer's representative of the defects and make good at contractor's cost with an intention of giving opportunity to the contractor of making good the defects appeared during that period. It is the contractor's obligation under the contract to rectify the defects that appear during Defect Liability Period and the contractor shall within a reasonable time after receipt of such instructions comply with the same at his own cost. The Engineering In charge/Project Officer shall issue a certificate to that effect and completion of making good defects shall be deemed for all the purpose of this contract to have taken place on the day named in such defect liability certificate.
- If defective work or workmanship or design have been knowingly covered-up or concealed so as to constitute fraud, commencement of the Defect Liability Period may be delayed. The decided period may be delayed until discovery actually occurs on at least the defect could have been discovered with reasonable diligence,

whichever is earlier.

- **The Defect Liability Period (DLP) for the work is as under :-**

BM/SIC/HIC/City Engineer	General works	3 years
	Structural works	5 years
	Waterproofing works	5 years
Ch.E.(M&E)	As per sanction u/no. AMC/P/3224 / Dtd. 15.12.2016, DLP / Warranty for all M&E works	1 year
	Lift	03 years

- Also, in case of defect, the Engineer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at. The Defects Liability Period shall be extended for as long as Defects remain to be corrected. Every time notice of Defect/Defects is given, the Contractor shall correct the notified Defect/Defects within the duration of time specified by the Engineer's notice. The Engineer may issue notice to the Contractor to carry out removal of defects or deficiencies, if any, noticed in his inspection, or brought to his notice. The Contractor shall remove the defects and deficiencies within the period specified in the notice and submit to the Engineer a compliance report.
- It is the Completion Stage when the contractor has completed all of the works and fixed all of the defects that were on the list of issue by Engineer-in-charge. When this happens, the engineer must issue a 'Certificate of Completion'. On the issue of 'Certificate of Completion', the 'Defect Liability Period' starts. The contractor also must issue a 'Certificate statement' as an acknowledgment to the engineer not later than 14 days after the 'Certificate of Completion' has been issued. During the 'Defect Liability Period', the contractor has to obey all written instructions from the engineer to carry out repairs and fix any defects which appear in the Permanent Works. If the contractor does not, due to his own faults finish the repair works or fix the defects by the end of 'Defect Liability Period', the 'Defect Liability Period' will continue until all works instructed by the engineer is done.

SECURITY DEPOSIT AND PERFORMANCE GUARANTEE

A. Security Deposit

The security deposit shall mean and comprise of

- I) Contract Deposit and
- II) Retention Money.

The security deposit shall mean and comprise of Contract Deposit and Retention Money.

- I) Contract Deposit – The successful tender, here after referred to as the contractor shall pay an amount equal to two (2) percent of the contract sum shall be paid within thirty days from the date of issue of letter of acceptance.
- II) Retention Money – The contractor shall pay the retention money an amount equal to five (5) percent of the Contract Sum which will be recovered from the contractors every bill i.e. interim / running / final bill. As per CA (F) prevailing circular. The clause of retention money will be applicable M. & E. Department.

B. Additional Security Deposit

(As per circular no CA/FRD/Project / 42 dtd 09.02.2021)

- 1) If the lowest bidder quotes rebate less than 12 % then the applicable additional security deposit (ASD) @ 1% for each % quoted below 12% will not require to be paid on line while submission of tender on line .
- 2) After sanction / approval of competent authority to the contract cost the lowest bidder shall deposit ASD in municipal citizen facility center in the form of demand draft as mentioned in Letter of acceptance within 15 working days as per prevailing practice of the said shall be submitted to HOD

C. Performance Guarantee:

The successful tender, here after referred to as the contractor shall pay in the form of “Performance Guarantee” at different rates for different slabs as stated below:

Offer	PG applicable %
For premium, at par and rebate 0 to 12%	PG= 0.92% x contract sum applicable for rebate of 12%
For rebate of 12.01% and more	P.G. = {0.92% x contract sum applicable for rebate of 12%} +(X) x contract sum where, X= percentage rebate quoted more than 12%

Note: **Contract sum shall mean amount after application of rebate/premium as quoted by the contractor with contingencies only and excluding price variation.**

The PG shall be paid in one of the following forms.

- I) Cash (In case guarantee amount is less than Rs.10,000/-)
- II) Demand Draft (In case guarantee amount is less than Rs.1,00,000/-)
- III) Government securities
- IV) Fixed Deposit Receipts (FDR) of a Schedule Bank.
- V) An electronically issued irrevocable bank guarantee bond of any Schedule bank or in the prescribed form given in Annexure.

Performance Guarantee is not applicable over and above the clause of Security Deposit. Performance Guarantee will have to be paid & shall be valid till the defect liability period or finalization of final bill whichever is later.

This deposit will be allowed in the form of I to V as mentioned above and shall be paid within 15 days after receipt of Letter of Acceptance.

Note: Following exceptions shall be adopted for 'Demolition Tenders':

- Irrespective of the offer (Rebate/ at par/ premium), ASD shall be differed and only PG of 10% of contract sum be taken from the successful bidder on award of contract only.
- BMC departments shall ensure to incorporate specific conditions regarding above in biddocument and e-tender notice.

D. Refund of Security Deposit

I. Refund of Contract Deposit

The Contract Deposit BG against 2% of capex cost will be released only upon submission of 2% BG against CSMC cost by the contractor. The CD shall be released within 30 days after completion of 1 year of DLP (in case of 1 year DLP) and after issue of 'Defect Liability Certificate' (in case of 1 ~~or 2 or 3 year~~ DLP) subject to no recoveries are pending against the said work, provided that the Engineer is satisfied that there is no demand outstanding against the Contractor. No claim shall be made against the Balance Contract Deposit after the issue of Defects Liability Certificate.

II. Refund of Retention Money

One-half (50%) of the Retention Money shall be released within 30 days of issue of 'Certificate of Completion' with respect to the whole of the Works. In the event the Engineer issues a Taking-over Certificate for a section or part of the Permanent Works, only such proposition thereof as the Engineer determines (having regard to the relative value of such section or part of the Works) shall be considered by the Engineer for

payment to the Contractor.

The balance Retention Money shall be released within 30 days after completion of FIRST year and after issue of 'Defect Liability Certificate' (in case of 1 or 2 or 3 years DLP) provided that the Engineer is satisfied that there is no demand outstanding against the Contractor. In the event of different Defects Liability Periods have been specified or become applicable to different sections or parts of the Permanent Works, the said moneys will be released within 30 days on expiration of the latest of such Defects Liability Periods.

Payment of the above mentioned 50% is exclusive of the amounts to be withheld as stated in and that amount shall be paid as per condition stated therein.

III. Refund of Additional Security Deposit

The additional security deposit shall be released within 30 days of issue of 'Certificate of Completion' with respect to the whole of the Works. In the event the Engineer issues a Taking over Certificate for a section or part of the Permanent Works, only such proportion thereof as the Engineer determines (having regard to the relative value of such section or part of the Works) shall be considered by the Engineer for payment to the Contractor.

IV. Refund of Performance Guarantee

The Deposit on account of performance guarantee against capex will be released only upon submission of Deposit on account of performance guarantee against CSMC.

The Deposit on account of performance guarantee against capex shall be released within 30 days of issue of Defects Liability Certificate subject to no recoveries are pending against the said work, provided that the Engineer is satisfied that there is no demand outstanding against the Contractor.

Summary of time of Refund of deposit is tabulated as follows:

A) Time of Refund for works having 5 years DLP

Deposits refunded after completion	After 3 yrs of DLP	After Completion of DLP
ASD + 50% of RM	CD+50% of RM	PG

B) Time of Refund for works having 1 or 2 or 3 years DLP

Deposits refunded after completion	After Completion of DLP
ASD + 50% of RM	CD+50% of RM+PG

Note :-

- a) It shall be clearly mentioned that the BG shall be applicable for individual work/contract and clubbing of various contracts of the said contractor will not be allowed. In case of obtaining Bank Guarantee, it is necessary to mention that the same shall be valid further 6 months from the completion of defect liability period/warranty period.
- b) It shall be the responsibility of the bidder to keep the submitted B.G. “VALID” for the stipulated time period in the tender & in case of its expiry it will attract penalization.
- c) Bank Guarantee should be issued by way of General Undertaking and Guarantee issued on behalf of the Contractor by any of the Nationalized or Scheduled banks or branches of foreign banks operating under Reserve Bank of India regulations located in Mumbai up to Virar & Kalyan. List of approved Banks is appended at the end of Instructions to Bidders (ITB). The Bank Guarantee issued by branches of approved Banks beyond Kalyan and Virar can be accepted only if the said Bank Guarantee is countersigned by the Manager of a Regional Branch of the same bank within the Mumbai City Limit categorically endorsing thereon that the said Bank Guarantee is binding on the endorsing Branch of the Bank or the Bank itself within Mumbai Limits and is liable to be enforced against the said Branch of the Bank or the bank itself in case of default by the Contractors furnishing the Bank Guarantee. The Bank Guarantee shall be renewed as and when required and/or directed from time to time until the Contractor has executed and completed the works and remedied any defects therein.

E. Legal + Stationary Charges: (As per applicable circular)

Successful tender shall pay the Legal Charges + Stationary charges as per Circular No. 26206 dtd 31.08.2023.

Sr. No.	Contract Cost	Legal & Stationery Charges
1	Rs. 1,00,00,001 to Rs. 10,00,00,000/-	Up to Rs. 1,00,00,000/- Rs, 10,000/- +.05% additional contract cost + 18 % GST

The tenderers are requested to note that stationary charges as given in the table above will be recovered from the successful tenderer for supply of requisite prescribed forms for preparing certificate bills in respect of the work.

F. Stamp Duty: (As per applicable circular)

It shall be incumbent on the successful tenderer to pay stamp duty on the contract.

- i. As per the provision made in Article 63, Schedule I of Bombay Stamp Act 1958, stamp duty is payable for “works contract” that is to say, a contract for works and labour or services involving transfer of property in goods (whether as goods or in some other form) in its execution and includes a sub-contract, as under :

(a)	Where the amount or value set forth in such contract does not exceed rupees ten lakh.	Five Hundred rupees stamp duty
(b)	Where it exceeds rupees ten lakhs	Five hundred rupees plus one hundred rupees for every Rs.1,00,000/- or part thereof, above rupees ten lakh subject to the maximum of rupees five lakh stamp duty.
(c)	Bank guarantee: As per article 54 read with 40(b) of stamp duty act, stamp duty of 0.5% will be applicable to the all bank guarantees submitted also which are required to be renewed after expiry of time period.	

- ii. The successful bidder shall enter into a contract agreement with BMC. within 30 days from the date of issue of Work Order and the same should be adjudicated for payment of Stamp Duty by the successful bidder.
- iii. Further shortfall if any, in amount of stamp duty paid as against prescribed amount for the documents executed in Mumbai City & Mumbai Suburban District be recovered from the concerned work contractors and to deposit the deficit or unpaid Stamp Duty and penalty by two separate Demand Draft or Pay Order in favour of “Superintendent of Stamp, Mumbai” within 15 days from intimation thereof.
- iv. All legal charges and incidental expenses in this respect shall be borne and paid by the successful tenderer.
- v. Labour cess will be applicable as per prevailing rules and norms as per circular u/n CA/FRT/12 dtd. 21/06/2012 and shall be borne by successful bidder

IMPORTANT DIRECTIONS

1. All the information uploaded shall be supported by the corroborative documents in absence of which the information uploaded will be considered as baseless and not accepted for qualification criteria. All the documents shall be uploaded with proper pagination. The page No. shall be properly mentioned in the relevant places. The information shall be uploaded in the sequence as asked for with proper indexing etc. The Bidder shall be fully responsible for the correctness of the information uploaded by him.
2. Applicants/Bidders shall refer to portal.mcgm.gov.in\tenders for “The Manual of Bid- Submission for Percentage Rate/Item Rate Tender Document.” The detail guidelines for creation and submission of bid are available in the referred document. Any queries or request for additional information concerning this TENDER shall be submitted by e-mail to eebc.city@mcgm.gov.in. The subject shall clearly bear the following identification/ title: "Queries/ Request for Additional Information: TENDER for Proposed works to be carried out at Annabhau Sathe Auditorium in campus of V.J.B.Udyan , Byculla on the land bearing CTS No.563(pt).Mazgoan Division in 'E' Ward .
3. Any changes in mail ID will be intimated on the portal.
4. In case of **Equal COST** of lowest bidders (L1), the allotment of work shall be done by giving 48 hrs (**2 working days**) from the day of opening of packet C on same **BID- Document number for re-quoting** and such development needs to be done by IT department in BMC's SRM system. **Till such development is made; 'Sealed Bids' shall be called from the bidders quoting the same rates i.e. L1.**

In case of equal cost of lowest bidders is obtained even after re-quoting, then the successful bidder will be decided by lottery system by the concerned Chief Engineer.

If ASD is not submitted within 15 days, EMD will be forfeited & company will be debarred for 2 years also other companies with same partners/directors will be debarred for 2 years .(As per circular u/no. CA/F/42/dtd.09/01/2021)

Also, the Performance Guarantee shall be paid in 15 days after receipt of Letter of Acceptance.

SECTION 7

SCOPE OF WORK

SCOPE OF WORK

Name of Work : Proposed works to be carried out at Annabhau Sathe Auditorium in campus of V.J.B.Udyan , Byculla on the land bearing CTS No.563(pt).Mazgoan Division in 'E' Ward .

The bidder shall visit the Annabhau Sathe Auditorium located at E.S.Patanwala Marg, V.J.B. Udyan ,Byculla (East), Mumbai: 400011, before bidding to the e-tender compulsorily, get well conversant with the site requirements, get acquainted with nature of work, study the details mentioned in the e-tender and obtain clarifications if any, and accordingly to quote for the same via e-tender only.

Work shall be carried out as per Technical specifications & scope of work .

1.Exiting Auditorium tentative area details :-

Tentative seats provided in auditorium :- **763 Nos.** Auditorium established with all facilities related to auditorium in 2022.

Floor	Facilities	Built up Area
Basement –	6 nos. Car parking spaces + Pit Puzzle Parking system (20nos Car parking space), AHU Room, In Out Ramp & Staircases.	1371.83 Sq.mt
Ground Floor	Auditorium, Stage, Ticketing, Entrance Foyer, Vip Room, Green Room, Makeup Change Room, Toilet His, Toilet Her, Janitor, Store Room, Chiller plant Room, In Out Ramp & Staircases Utilities, Pump room, Firefighting Water Storage tank, Domestic Water storage tank, Recycle water tank & Staircase	1454.26 Sq.mt 592.07 Sq.mt
First Floor	Auditorium, Silence Room, Sound - Light Control Room , Entrance Foyer, Manager Room, Office, Toilet His, Toilet Her, AHU Room & Staircases	1429.57 Sq.mt
	Total Area	4847.73 Sq.mt

To carry out Civil ,Structural ,Electrical works as per following scope :-

2.0 Scope of work:

- 2.1. The works contemplated under this construction comprise of Part – A – Civil works: Wooden work ,Pit work ,Structural steel Trusses, Entrance/ Exit Ramps, flooring, windows ,Doors, Structural Glazing, roof work to attend leakage & drumming effect etc. with interior facilities as per scope. Part – B: MEP, Stage lighting, Auditorium sound system AV system , Security works etc. as per scope indicated in tender.
- 2.2 The entire work in this tender are divided into different parts depending on the different types of work involved. However, this broad classification is for mere guidance only. Actual

work shall be as described in the Drawings, Specification and Bill of Quantities and as instructed at site from time to time.

- 2.3 Scope of work may be altered during work execution, accordingly payment will be made as actual.
- 2.4 Specification of the material shall be as per standards specifications and related to confirm the IS code and to the satisfaction of the User Department , PMC.

The scope of work Summarized as below:

1. To increase stage depth by shifting front curtain by 1-2 Feet as per layout. Curtain to be shift in line of existing array speakers.
2. Providing extra lighting bar with additional lights at stage for front side area of stage after shifting of front curtain with catwalk provision.
3. Shifting of existing orchestra pit at center (6.5 ftx10 ft.) and keep the steps at both side along center pit by covering existing site pit to extend the stage area with shifting of all electrical services connections.
4. Additional Acoustic provisions for catwalk area, closing of open entries etc. to avoid disturbance of internal and external sound noise.
5. Replacement of revolving wings with sliding wings as per client requirement.
6. Providing 'C' type catwalk for par light above auditorium chair area for par light setting during show & maintenance by providing entry from front door exist passage area.
7. Make up room partition removal & allied work for left side of auditorium. Glass table to be replace with wooden table.
8. Alteration to railing at first floor entry for queues No. S,T,U,V&W.
9. Removal of wooden batten form wall of sound room & cry room to sea show.
10. To increase FOH window size for light adjustment, also increase par lights/spot at stage area.
11. Back side area waiting room refurbishment with provision of toilet and AC system.
12. Provision of ladders for maintenance of terrace area with easy access.

13. To attend leakages from roof area.
14. To provide treatment for drumming sound of rain from roof sheets (Waterproofing, Acoustical treatment)
15. Providing glass protection for Annabhau Sathes's Mural.
16. Additional lighting side bar arrangement for effective area of stage with truss provision by covering with zhalar /curtain.
17. To carryout necessary civil work for easy movement of vehicles for stage area by providing addition gate at E.S.Patanwalla Road.
18. Additional camera's , CCTV display monitors, NVR provision for office area at Auditorium, ground and first floor by add on the existing system.
19. Re-arrange the existing Array speakers by adding 2 Nos more speakers.
20. To provide monitor speakers in all make room .
21. Closing the all openings with acoustical partitions whichever found by filling sealing materials to maintain acoustical effect in Auditorium and office area.
22. Provision of Displays, advertising boards for drama's /functions at Entrance areas
23. Decorative façade lighting for Auditorium façade area towards road side.
24. Providing dark colored carpet in gangway area.
25. Provision of steel wire fencing on compound wall of auditorium areas.
26. Provision of canteen platform at first floor & provision of cafet area at ground floor backside garden area with tensile roof .
27. Protection grills/ steel net/ tensile roof for safety of staff from tree branches falls .
28. Bird entry protection grills provision at basement area.
29. Providing wooden flooring, Synthetic carpet ,structural steel ,gypsum board, painting work ,rewiring ,recalibration ,etc miscellaneous works to complete the work to run auditorium in all respect.
30. Providing statue of Lokshahir Annabhau Sathe as per art approved by User Department.

31. Providing chair cover item (Tarpolin) during work execution. Removing, re-fixing of chair if required during catwalk fabrication work.
32. Providing cup lock scaffolding for catwalk and allied works proposed in Auditorium.
33. Providing lift from parking /ground level to first floor for senior citizen /handicap persons as per TS

Related other works to be carry out :-

34. The successful contractor shall get the material factory inspected / approved before execution of work. All inspection charges will born by contractor.
35. The successful contractor shall take all necessary measures from a safety point of view during the execution of the work in the premises.
36. Any changes/alteration/modification/shifting of the electric network that may be required at the concerned site/area/space will be the responsibility of the successful contractor.
37. Restoration of existing all services such as stage lighting system, sound system, curtain system etc. after addition alteration work is sole responsibility of contractor.
38. BMC reserves the right to change the location, modify the quantity between fixed stackable volume organizer and variable stackable volume organizer within the limit of the contract cost with the sanction of competent authority.
39. Trial and Testing of auditorium equipments, lights, sound system, curtain system,lighting bar etc.
40. Commissioning & programming, calibration of all equipments.
41. The hardware and control cables should be of the best quality and all the electrical works should comply with the Indian /state electricity rules.
42. All the material used shall conform with relevant IS Codes.
43. BOQ is for reference purpose only, any other item required, over &above the mentioned BOQ shall be included by the tenderer, without any extra cost to MCGM.

PART – A – CIVIL WORK:

- **Enabling Work** – Demolition/ Dismantling of existing structures removing the existing sundry items, floorings, doors windows, Plumbing items pipes, Electrical fittings cabling etc as directed. General rectification , alteration work defined in scope given as below.
- **PCC/ RCC Works** – RCC work for Foundation, Raft, walls, slabs, Lintels, beams, columns, staircase, folded slabs, weather shades etc & Reinforcement steel as per detail structural drawings as applicable.
- **Masonry Works** – Brick work, autoclaved aerated cement block work, Coursed rubble masonry as applicable
- **Plastering Works** – Internal external cement sand plaster, Birla putty, Pointing to stone masonry etc. as applicable
- **Waterproofing Works** - Water proofing treatment and cement based patented treatment for terrace Roof chajjas etc. membrane water proofing as applicable
- **Structural Steel Works** – Providing detailing fabricating Hot rolled section, Built-up sections, Hollow steel section of Tata Structural for catwalk, lighting bars ,curtain bars , Rafters, purlins etc. Entrance Gates, MS railing, SS railing, Colour Coated Galvalume/zincalume sheets for Roof cladding.
- **Flooring/ Tiling/ Dado work** – Providing/ laying/ fixing flooring Kota, Granite, Vitrified tile, ceramic tile, Terracotta Tile dado, Concrete pavers as applicable
- **WOOD/ ALUMINIUM/ FALSECEILING/ CLADDING/ GLAZING WORKS** – Providing fixing Wooden frame , door shutter, glass doors, glass partition, structural glazing, windows, structural glazing, Aluminium composite panel cladding, gypsum false ceiling, metal false ceiling, Toilet cubicle system etc. as applicable
- **PAINTING WORKS** - Providing applying white wash, Obd, Plastic emulsion paint, exterior paint, fire retarding paint etc. per detail drawings & finishing schedule.

- **COLORED CARPET** :- Providing of dark colored carpet in Gangway area.
- **AUDITORIUM FURNISHING/ ACOUSTICAL WORKS** – Providing fixing Teak wood wooden reed putty, Thermal/ Acoustical insulation ceiling including 50 mm thk Micron of 1000 gsm density, wall, ceiling panels Microfibre Black Matt panels, Wood wool board ceiling/ wall panelling covered with fabric, wooden stage flooring, skirting, steps risers, observation windows, acoustical doors, catwalk, perforated aluminum sheet on walls and ceiling, Synthetic washable carpet of 1000 gsm Loop pile woolen / nylon carpet with 8 mm thk Closing the all openings with acoustical partitions whichever found by filling sealing materials to maintain acoustical effect in Auditorium and office area, as applicable
- **STAGE CRAFT** – Providing fixing installing fabrics for stage craft system fire retardant velvete fabric with lining gathering for main scallop, House curtain, Mid curtain, Rear curtains, frills, lighting bars, shifting of main curtain, lighting bar , providing additional stage lighting etc. as applicable while restoration as per directives of Engineer incharge.
- **ROOF WATERPROOFING:-** Providing fixing double skin steel sheet with water proofing treatment to attend leakages as well as drumming effect of rain water . providing /improving existing drain system & gutter as per directives of Engineer & PMC

PART – B – MEP, SECURITY WORKS ETC. :

- **ELECTRICAL WORK** – Providing & installing Panels, DBS, cables, lightings, power wiring, earthing etc. complete as per manufacturers specifications & drawings as required during renovation/rectification.
- **STAGE LIGHTING** – Supply Installation, re-fixing of cool light, halogen Fresnel/ zoom profile spot light, flood light, stage lighting accessories, Infrastructure for stage lighting & stage craft system, suspenders, clamps, brackets, MS C-track grid, MS grating, cable tray, CEE/ IEC cable termination power marshaling box, motor control center panel, Remote control panel, motorized lighting bars, self-climbing motorized tele climber hoists, motorized main scallop bar, motorized curtain track system etc. as required during renovation/rectification. Shifting

of main curation included in scope by necessary fabrication, alteration work as per provided drawing. Contractor shall do necessary cabling, rewiring work, fabrication ,networking connections without joint to cables by replacing existing power , communication , LV cable with new to avoid power issues in future.

- **AUDITORIUM SOUND SYSTEM** – Rectification/ re-termination/ calibration of sound system etc. complete as per manufacturers specifications & drawings as required during renovation/rectification. Contractor shall do necessary cabling, rewiring work ,networking connections without joint to cables by replacing existing power , communication , LV cable with new to avoid power issues in future.re- arrange the existing array speakers by adding 2 Nos. new speakers of same make. Shifting of arrey speakers ,calibration for sound effect and required sound quality as per sound /stage consultant requirement.
- **SECURITY WORK** – Renovation/ rectification of existing CCTV Analog, Public Address system for better performance. Contractor shall do necessary cabling, rewiring work ,networking connections without joint to cables by replacing existing power , communication , LV cable with new to avoid power issues in future. Add-on the system by providing additional camera's and displays with necessary cabling ,networking etc.
- **LIFT WORK** :- Providing 01 No. Lift for senior citizen /handicap persons at Auditorium as per technical specification.

3. **SPECIAL PRECAUTIONS:**

- i. Since the safety is of prime importance, abundant precautions must be taken during breaking/ demolition work. THE SCHEME AND SEQUENCE OF OPERATIONS MUST HAVE APPROVAL OF THE ENGINEER.
- ii. The Contractor shall carry out the work in a manner, taking in to all consideration that the work is to be carried in the campus of V.J.B. Udyan. The Contractor may have, therefore, have to adjust his working hours etc.
- iii. Despite this entire if some disturbance is inevitable due to the very nature of any particular

item of work, the contractor shall give previous intimation in writing to the Engineer to enable the Employer to organize his matters suitably.

- iv. During the work at site the approach to and exit should be specified & adequately protected and also should be free of building materials, debris, machinery, tools, plant etc., so that free access without any hindrance is available for the movement of other users and their vehicles.
- v. At the same time special care has to be taken while storing these items elsewhere so that no overloading takes place. All the storing will have therefore to be necessarily done on approval from the Engineer.
- vi. Contractor shall take care of existing systems functioning, auditorium chairs to avoid dust effect , fabrics damages etc. by covering the same.
- vii. While working, it must be remembered that use of V.J.B. Udyan campus & gate, will not be permitted for transportation of materials and / or labour. If however, it becomes inevitable on any count, the contractor shall do so in consultation with the Engineer.
- viii. Since work will have to be carried out at all heights and in all seasons abundant care and precautions will have to be taken by the contractor to prevent any falling objects from top endangering people and objects below. The contractor will have to provide working platforms in the corridor's while working. Necessary safety nets, barricading, covering of existing services, systems , panels etc are also to be provided.
- ix. In general the work shall be carried out in a manner as not to adversely affect neighboring structures and activities should be carried out with minimum disturbance, noise, dust, vibrations, shocks etc. While working during odd hours, care has to be taken to see that occupants of neighboring buildings are not put to any inconvenience due to noise, bright light etc.
- x. The Contractor must follow provisions of safety code as indicated in tender document and / as directed by the Engineer. The Contractor shall ensure provision of safety belts, helmets, etc. for people working at site. He must also take all precautions against fire / electrical hazards.

- xi. *Bidder /Lift OEM shall submit feasibility report for lift installation as per site constraint & select suitable lift location as per user /client requirement.*
- xii. Contractor shall sole responsible to obtain all the NOC's of statutory bodies.
- xiii. Contractor shall give successful testing of all systems related to auditorium after refurbishment /rectification / repair/ alteration work as directed by engineer/ PMC .
- xiv. Contractor shall deploy specialized agencies for the work related to stage lighting, acoustical work, auditorium sound system , security system , stage curtain systems to get efficient final output in satisfaction of client , stage artist and consultant.

SECTION 8

BILL OF QUANTITIES

Sr.No 1	Description2	Unit 3	Nos 4	% Rate (online only) (excluding GST) 5	Amount (excluding GST) 6
1	Civil, Structural, Architectural, Art works to be done as per scope & technical specification at Annabhau Sathe Auditorium .	Job	1		
2	Mechanical & Electrical works to be done as per scope & technical specification at Annabhau Sathe Auditorium	Job	1		
3	Supply, installation, testing and commissioning of Fully Automatic Glass Elevator at Annabhau Sathe Auditorium, Byculla in E Ward.	Job	1		
	Total bid price quoted	1+2+3=			

IN WORDS:

Note :- The bidder has to quote his final rates on this page online only.

SECTION 9

**GENERAL CONDITIONS OF
CONTRACT**

General 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 initials are used to identify defined terms.

The “Contract” shall mean the tender and acceptance thereof and the formal agreement if any, executed between the Contractor, Commissioner and the Corporation together with the documents referred to therein including these conditions and appendices and any special conditions, the specifications, designs, drawings, price schedules, bills of quantities and schedule of rates. All these documents taken together shall be deemed to form one Contract and shall be complementary to one another.

The Contract Data defines the documents and other information which comprise the Contract. **The “Contractor”** shall mean the individual or firm or company whether incorporated or not, whose tender has been accepted by the employer and the legal successor of the individual or firm or company, but not (except with the consent of the Employer) any assignee of such person. **The Bidder** is a person or corporate body who has desired to submit a Bid to carry out the Works, including routine maintenance till the tender process is concluded.

The Contractor's Bid is the completed bidding document submitted by the Contractor to the Employer.

The “Contract Sum” means the sum named in the letter of acceptance including Physical contingencies subject to such addition thereto or deduction therefrom as may be made under the provisions hereinafter contained.

Note : The contract sum shall include the following -

- In the case of percentage rate contracts the estimated value of works as mentioned in the tender adjusted by the Contractor's percentage.
- In the case of item rate contracts, the cost of the work arrived at after finalization of the quantities shown in schedule of items / quantities by the item rates quoted by the tenderers for various items and summation of the extended cost of each item.
- In case of lump sum contract, the sum for which tender is accepted.
- Special discount / rebate / trade discount offered by the tenderer if any and accepted by the Corporation.

- Additions or deletions that are accepted after opening of the tenders.

The “Contract Cost” means the Contract Sum plus Price Variation. This cost shall be included in the letter of acceptance.

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

The Defects Liability Certificate is the certificate issued by the Engineer, after the Defect Liability Period has ended and upon correction of Defects by the Contractor.

Drawing means all the drawings, calculations and technical information of a like nature provided by the Engineer to the Contractor under the Contract and all drawings, calculations, samples, patterns, models, operation & maintenance manual and other technical information of like nature submitted by the Contractor and approved by the Engineer.

The Authority shall mean Brihanmumbai Municipal Corporation (BMC)

The “Employer” shall mean the Municipal Corporation for Greater Mumbai / Municipal Commissioner for Greater Mumbai, for the time being holding the said office and also his successors and shall also include all “Additional Municipal Commissioners, Director (Engineering Services & Projects)” and the Deputy Municipal Commissioner, to whom the powers of Municipal Commissioner, have been deputed under Section 56 and 56B of the Mumbai Municipal Corporation Act.

The Engineer in-charge shall mean the Executive Engineer in executive charge of the works and shall include the superior officers of the Engineering department i.e. Dy. Ch. Eng / Ch. Eng. and shall mean and include all the successors in BMC

The Engineer's Representative shall mean the Assistant Engineer, Sub. Engineer/Jr. Engineer in direct charge of the works and shall include Sub Eng./ Jr. Eng of Civil section/ Mechanical section/ Electrical section appointed by BMC.

The “Engineer” shall mean the City Engineer / the Hydraulic Engineer / the Chief Engineer / the Special Engineer, appointed for the time being or any other officer or officers of the Municipal Corporation who may be authorized by the commissioner to carry out the functions of the City Engineer / the Hydraulic Engineer / the Chief Engineer / the Special Engineer or any other competent person appointed by the employer and notified in writing to the Contractor to act in replacement of the Engineer from time to time.

Contractor's Equipment means all appliances and things of whatsoever nature required for the execution and completions of the Works and the remedying of any defects therein, but do not include plant material or other things intended to form or forming part of the Permanent 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 construction 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 and works of routine maintenance.

Plant is any integral part of the Works that shall have a mechanical, electrical, electronic, chemical, or biological function.

Routine Maintenance is the maintenance of activities of the competed structure for five years as specified in the Contract Data.

The "Site" shall mean the land and other places including water bodies more specifically mentioned in the special conditions of the tender, on, under in or through which the permanent works or temporary works are to be executed and any other lands and places provided by the Municipal Corporation for working space or any other purpose as may be specifically designated in the contract as forming part of the site.

Site Investigation Reports are those that were included in the bidding documents and are reports about the surface and subsurface conditions at the Site.

"Specification" shall mean the specification referred to in the tender and any modification thereof or addition or deduction thereto as may from time to time be furnished or approved in writing by the Engineer.

The Start Date/Commencement 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 Nominated Sub-Contractor is a person or corporate body who has a Contract with the Contractor to carry out a part of the construction work and/or routine maintenance in the Contract, which includes work on the Site.

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

Variation means a change to the:-

- i) Specification and /or Drawings (if any) which is instructed by the Employer.
- ii) Scope in the Contract which is instructed by the Employer.
- iii) Price in the Contract which is instructed by the Employer.

The Works, as defined in the Contract Data, are what the Contract requires the Contractor to construct, install, maintain, and turn over to the Employer. Routine maintenance is defined separately.

Jurisdiction: In case of any claim, dispute or difference arising in respect of a contract, the cause of action thereof shall be deemed to have arisen in Mumbai and all legal proceedings in respect of any claim, dispute or difference shall be instituted in a competent court in the City of Mumbai only.

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 these 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 documents :
 - (1) Agreement, (2) Letter of Acceptance, (3) Notice to Proceed with the Work, (4) Contractor's Bid, (5) Contract Data, (6) Special Conditions of Contract Part (7) General Conditions of Contract Part I, (8) Specifications, (9) Drawings, (10) Bill of Quantities, and (11) Any other document listed in the Contract Data.

3. Engineer's Decisions

- 3.1. Except where otherwise specifically stated, the Engineer will decide contractual matters between the Employer and the Contractor in the role representing the Employer. However, if the Engineer is required under the rules and regulations and orders of the Employer to obtain prior approval of some other authorities for specific actions, he will so obtain the

approval, before communicating his decision to the Contractor.

3.2. Except as expressly stated in the Contract, the Engineer shall not have any authority to relieve the Contractor of any of his obligations under the contract.

4. Delegation

The Engineer, with the approval of the Employer, may delegate any of his duties and responsibilities to another person(s), except to the Adjudicator, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.

5. Communications

All certificates, notices or instructions to be given to the Contractor by Employer/ Engineer shall be sent on the address or contact details given by the Contractor of Bid. The address and contact details for communication with the Employer/ Engineer shall be as per the details given in Contract Data. Communications between parties that are referred to in the conditions shall be in writing. The Notice sent by facsimile (fax) or other electronic means shall be effective on confirmation of the transmission. The Notice sent by Registered post or Speed post shall be effective on delivery or at the expiry of the normal delivery period as undertaken by the postal service.

6. Sub-contracting

6.1. Unless specifically mentioned in the contract subletting will not be allowed. Subletting, where otherwise provided by the contract shall not be more than 25% of the contract price.

6.2. The Contractor shall not be required to obtain any consent from the Employer for:

- a. the sub-contracting of any part of the Works for which the Subcontractor is named in the Contract;
- b. the provision for labour, or labour component.
- c. the purchase of Materials which are in accordance with the standards specified in the Contract.

6.3. Beyond what has been stated in clauses 6.1 and 6.2, if the Contractor proposes subcontracting any part of the work during execution of the Works, because of some unforeseen circumstances to enable him to complete the Works as per terms of the Contract, the Employer will consider the following before according approval:

- a. The Contractor shall not subcontract the whole of the Works.
- b. The permitted subletting of work by the Contractor shall not establish any contractual relationship between the sub-contractor and the BMC and shall not relieve the Contractor

of any responsibility under the Contract.

- 6.4. The Engineer should satisfy himself before recommending to the Employer whether,
- a. the circumstances warrant such sub-contracting; and
 - b. the sub-Contractor so proposed for the Work possesses the experience, qualifications and equipment necessary for the job proposed to be entrusted to him.

7. **Other Contractors**

- 7.1. The Contractor shall cooperate and share the Site with other Contractors, public authorities, utilities, and the Employer between the dates given in the Schedule of Other Contractors, as referred to in the Contract Data. The Contractor shall 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.
- 7.2. The Contractor should take up the works in convenient reaches as decided by the Engineer to ensure there is least hindrance to the smooth flow and safety of traffic including movement of vehicles and equipment of other Contractors till the completion of the Works.

8. **Personnel**

- 8.1. The Contractor shall employ for the construction work and routine maintenance the key personnel including technical personnel named in the Contract Data or other personnel approved by the Engineer. The Engineer will approve any proposed replacement of technical personnel only if their relevant qualifications and abilities are substantially equal to those of the personnel stated in the Contract Data.
- 8.2. The Contractor's personnel shall appropriately be qualified, skilled and experienced in their respective trades or occupations. The Engineer shall have authority to remove, or cause to be removed, any person employed on the site or works, who carries out duties incompetently or negligently and persists in any conduct which is prejudicial to safety, health or the protection of the environment.
- 8.3. If the Engineer asks the Contractor to remove a person who is a member of the Contractor's staff or 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 Works in the Contract.
- 8.4. The Contractor shall not employ any retired Gazette officer who has worked in the Engineering Department of the BMC /State Government and has either not completed two years after the date of retirement or has not obtained BMC/State Government's permission

to employment with the Contractor.

9. **Employer's and Contractor's Risks**

9.1. 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.

10. **Employer's Risks**

10.1. The Employer is responsible for the excepted risks which are (a) in so far as they directly affect the execution of the Works in the Employer's country, the risks of war, 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.

11. **Contractor's Risks**

11.1. 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, referred to in clause 11.1, are the responsibility of the Contractor.

12. **Insurance**

12.1. The Contractor at his cost shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of 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 to property (other than the Works, Plant, Materials, and Equipment) in connection with the Contract; and
- d) Personal injury or death.

12.2. Insurance 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.

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

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

12.5. 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 premiums shall be debt due.

13. Site Investigation Reports

13.1. The Contractor, in preparing the Bid, may rely, at his own risk, on any Site Investigation Reports referred to in the Contract Data, supplemented by any other information available to him, before submitting the bid.

14. Queries about the Contract Data

14.1. The Engineer will clarify queries on the Contract Data.

15. Contractor to Construct the Works and Undertake Maintenance (if specified in the tender)

15.1. The Contractor shall construct, and install and maintain the Works in accordance with the Specifications and Drawings and as per instructions of the Engineer.

15.2. The Contractor shall construct the works with intermediate technology, i.e., by manual means with medium input of machinery required to ensure the quality of works as per specifications. The Contractor shall deploy the equipment and machinery as required in the contract.

15.3. The Contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation. During continuance of the contract, the Contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and byelaws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in future by the State or Central Government or the local authority. Salient features of some of the major laws that are applicable are given below:

- The Water (Prevention and Control of Pollution) Act, 1974, this provides for the prevention and control of water pollution and the maintaining and restoring of wholesomeness of water. 'Pollution' means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create

a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms.

- The Air (Prevention and Control of Pollution) Act, 1981, this provides for prevention, control and abatement of air pollution. 'Air Pollution' means the presence in the atmosphere of any 'air pollutant', which means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment.
- The Environment (Protection) Act, 1986, this provides for the protection and improvement of environment and for matters connected therewith, and the prevention of hazards to human beings other living creatures, plants and property. 'Environment' includes water, air and land and the interrelationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property.
- The Public Liability Insurance Act, 1991, This provides for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and for matters connected herewith or incidental thereto. Hazardous substance means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act 1986, and exceeding such quantity as may be specified by notification by the Central Government.

16. The Works and Routine Maintenance to be completed by the Intended Completion Date

16.1. The Contractor may commence execution of the Works on the Start Date and shall carry out the Works and Routine Maintenance, if specified in the tender, 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.

17. Approval by the Engineer

17.1. 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.

17.2. The Contractor shall be responsible for design and safety of Temporary Works.

17.3. The Engineer's approval shall not alter the Contractor's responsibility for design and

safety of the Temporary Works.

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

17.5. 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.

18. Safety

18.1. The Contractor shall be responsible for the safety of all activities on the Site. He shall comply with all applicable safety requirements and take care of safety of all persons entitled to be on the site and the works. He shall use reasonable efforts to keep the site and the works, both during construction and maintenance, clear of unnecessary obstruction so as to avoid danger to the persons and the users.

- Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
- Stone breaker shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
- The area should be barricaded or cordoned off by suitable means to avoid mishaps of any kind. Power warning signs should be displayed for the safety of the public whenever cleaning works are undertaken during night or day.
- The workers engaged for cleaning the manholes/sewers should be properly trained before allowing working in the manhole.

18.2. Safety Programs:-

- I. Have adequate safety supervision in place to ensure that safety programs set up by the firms/agencies are in compliance with prevalent laws and regulations.
- II. Review safety programs developed by each of the trade firms, prepare and submit a comprehensive safety program.
- III. Monitor day to day implementation of safety procedures.

18.3. First Aid Facilities: -

- i. At every work place there shall be provided and maintained, so as to be easily accessible during working hours, first-aid boxes at the rate of not less than one box for 150 contract labour or part thereof ordinarily employed.
- ii. The first-aid box shall be distinctly marked with a red cross on white background.
- iii. Adequate arrangements shall be made for immediate recoupment of the equipment when necessary.
- iv. Nothing except the prescribed contents shall be kept in the First-aid box.

- v. The first-aid box shall be kept in charge of a responsible person who shall always be readily available during the working hours of the work place.
- vi. A person in charge of the First-aid box shall be a person trained in First-aid treatment, in the work places where the number of contract labour employed is 150 or more.

19. Discoveries

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

20. Possession of the Site

20.1. The Employer shall handover complete or part possession of the site to the Contractor 7 days in advance of construction programme. At the start of the work, the Employer shall handover the possession of at-least 75% of the site free of all encumbrances, the remaining 25 % of the possession as per contractor's construction programme.

21. Access to the Site

21.1. The Contractor shall allow access to the Site and to any place where work in connection with the Contract is being carried out, or is intended to be carried out to the Engineer and any person/persons/agency authorized by: a. The Engineer b. The Employer or authorized by the Employer.

22. Instructions

22.1. The Contractor shall carry out all instructions of the Engineer, which comply with the applicable laws where the Site is located.

22.2. The Contractor shall permit the appointed and/or authorized persons to inspect the Site and/or accounts and records of the Contractor and its subcontractors relating to the performance of the Contract, and to have such accounts and records audited by auditors appointed, if so required. The Contractor's attention is invited to Clause of 'Fraud and Corruption', which provides, inter alia, that acts intended to materially impede the exercise of the inspection and audit rights provided for under the Clause & constitute a obstructive practice subject to contract termination

22.3. Engineer to have power to issue further drawings or instructions:

The Engineer shall have the power and authority from time to time and at all times to make and issue such further drawings and to give such further instructions and directions as may appear to him necessary or proper for the guidance of the contractor and the good

and sufficient execution of the works according to terms of the specifications and Contractor shall receive, execute, obey and be bound by the same, according to the true intent and meaning thereof, as fully and effectually as though the same had accompanied or had been mentioned or referred to in the specification, and the Engineer may also alter or vary the levels or position or nature of works contemplated by the specifications, or may order any of the works contemplated thereby to be omitted, with or without the substitution of any other works in lieu thereof, or may order any work or any portion of work executed or partially executed, to be removed, changed or altered, added if needful, may order that other works shall be substituted instead thereof and difference of expense occasioned by any such diminution or alteration so ordered and directed shall be added to or deducted from the amount of this Contract, as provided under condition no.10(a) hereinafter.

No work which radically changes the original nature of the Contract shall be ordered by the Engineer and in the event of any deviation being ordered which in the opinion of the Contractor changes the original nature of Contract he shall nevertheless carry it out and disagreement as to the nature of the work and the rate to be paid therefore shall be resolved in accordance with condition no.13d.

The time for completion of the Works, shall be in even of any deviations resulting in additional cost over the contract price being ordered, be extended or reduced reasonably by the Engineer.

The Engineer's decision in this case shall be final.

B. Time Control

23 Programme

23.1 within the time stated in the Contract Data, the Contractor shall submit to the Engineer for approval a Programme, including Environment Management Plan showing the general methods, arrangements, order, and timing for all the activities in the Works, along with monthly cash flow forecasts for the construction of works.

After the completion of the construction works, the programme for the Routine Maintenance Work, showing the general methods, arrangements, order and timing for all the activities involved in the Routine Maintenance will also be submitted by the Contractor to the Engineer for approval if specified in the tender. The programme for Routine Maintenance will be submitted each year for the period of Maintenance.

23.2 The Contractor shall submit the list of equipment and machinery being brought to site,

the list of key personnel being deployed, the list of machinery/ equipment's being placed in field laboratory and the location of field laboratory along with the Programme. The Engineer shall cause these details to be verified at each appropriate stage of the programme.

23.3 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 Works, including any changes to the sequence of the activities.

23.4 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.

23.5 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 shall show the effect of Variations and Compensation Events.

24 **Extension of Time In Contracts:**

Subject to any requirement in the contract as to completion of any portions or portions of the works before completion of the whole, the contractor shall fully and finally complete the whole of the works comprised in the contract (with such modifications as may be directed under conditions of this contract) by the date entered in the contract or extended date in terms of the following clauses:

a) **Extension attributable to BMC**

- i) **Extension Due To Modification:** If any modifications have been ordered which in the opinion of the Engineer have materially increased the magnitude of the work, then such extension of the contracted date of completion may be granted as shall appear to the Engineer to be reasonable in the circumstances, provided moreover that the Contractor shall be responsible for requesting such extension of the date as maybe considered necessary as soon as the cause thereof shall arise and in any case **should not be less than 30 days before the expiry of the date fixed for completion of the works.**
- ii) **Extension For Delay Due To BMC:** In the event of any failure or delay by the BMC to hand over the Contractor possession of the lands necessary for the execution of the works or to give the necessary notice to commence the works or

to provide the necessary drawings or instructions or any other delay caused by the BMC due to any other cause whatsoever, then such failure or delay shall in no way affect or vitiate the contract or alter the character thereof or entitle the contractor to damages or compensation therefore, but in any such case, the BMC may grant such extension(s) of the completion date as may be considered reasonable.

Note: For extension of time period as governed in (i) and (ii) above, any modifications in design/drawings, specifications, quantities shall be needed to be justified with recorded reasons with approval of C.E./ Ch. Eng. for not anticipating the same while preparing estimates and draft tender.

b) Extension Of Time For Delay Due To Contractor :

The time for the execution of the work or part of the works specified in the contract documents shall be deemed to be the essence of the contract and the works must be completed no later than the date(s) / the programme for completion of work as specified in the contract. If the contractor fails to complete the works within the time as specified in the contract for the reasons other than the reasons specified in above as (a.i) and (a.ii), the BMC may, if satisfied that the works can be completed by the contractor within reasonable short time thereafter, allow the contractor for further extension of time as the Engineer may decide. On such extension the BMC will be entitled without prejudice to any other right and remedy available on that behalf, to recover the compensation as governed by Clause 8(e) of GCC.

For the purpose of this Clause, the contract value of the works shall be taken as value of work as per contract agreement including any supplementary work order/contract agreement issued.

Further, competent authority while granting extension to the currency of contract under Clause (b) of as above may also consider levy of penalty, as deemed fit based on the merit of the case. Also, the reasons for granting extension shall be properly documented.

25 Delays Ordered by the Engineer

25.1 The Engineer may instruct the Contractor to delay the start or progress of any activity within the Works. Delay/delays totaling more than 30 days will require prior written approval of the DMC/AMC.

26 Management Meetings

26.1 The Engineer may require the Contractor to attend a management meeting. The

business of a management meeting shall be to review the plans for progress of the Works.

- 26.2 The Engineer shall record the business of management meetings and provide copies of the record to those attending the meeting. The responsibility of the parties for actions to be taken shall be decided by the Engineer either at the management meeting or after the management meeting and stated in writing to all those who attended the meeting.

C. Quality Control

27.1 Work to be open to Inspection and Contractor or Responsible agent to be present

All works under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of the Eng-in-charge and his subordinates and the contractor shall at all times during the usual working hours, at all other times, during the usual working hours and at all other times at which reasonable notice of the intention of the Eng- in- charge and his subordinates to visit the works shall have been given to the contractor, either himself be present to receive orders and instruction or have responsible agent duly accredited in writing present for that purpose. Order given to the contractors' duly authorized agent shall be considered to have the same force and effect as if they had been given to the contractor himself.

27.2 Notice To Be Given Before Work Is Covered Up

The contractor shall give not less than ten days' notice in writing to the Eng-In-Charge or his subordinate in-charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimension thereof taken before the same is so covered up or placed beyond the reach of measurements and shall not cover up or place beyond the reach of measurement any work without the consent in writing of the Eng-In-Charge or his subordinate in-charge of the work, and if any work shall be covered up or placed beyond the reach of measurement, without such notice having been given or consent obtained the same shall be uncovered at the contractors expenses, and in default thereof no payment or allowance shall be made for such work or for the materials with which the same was executed

27.3 Works to be executed in accordance with specifications / drawings / orders etc. :

The contractor shall execute the whole and every part of the work the most substantial and workmanlike manner and both has regards material and every other respect in strict accordance with specifications. The contractor shall also confirm exactly, fully and faithfully to the designs, drawings and instructions in writing relating to the work signed by the Engineer In-charge and lodged in his office and to which the contractor shall be entitled to

have access for the purpose of inspection at such office, or on the site or work during office hours. The contractor shall be entitled to receive three sets of contract drawings and working drawings as well as one certified copy of the accepted tender along with the work order free of cost.

27.4 Ready Mix Concrete/ Asphalt Mix

- i. The contractor shall have to arrange Ready Mix concrete (RMC)/Asphalt from RMC/ASPHALT producing plants registered with BMC
- ii. The contractor shall, within 7 days of award of the work, submit a list of at least three RMC/Asphalt producers with details of such plants including details and number of transit, mixers & pumps etc. to be deployed indicating name of owner/company, its location, capacity, technical establishment.

The Engineer-in-charge will reserve the right to inspect at any stage and reject the concrete if he is not satisfied about the quality of product at the user's end.

- iii The Engineer-in-charge reserves the right to exercise control over the:-
 - a) Calibration check of the RMC/Asphalt plant.
 - b) Weight and quantity check on the ingredients, water and admixtures added for batch mixing for RMC plants
 - c) Time of mixing of concrete/grade of asphalt.
 - d) Testing of fresh concrete/asphalt mix, recording of results and declaring the mix fit or unfit for use. This will include continuous control on the work ability during production and taking corrective action, if required.
 - e) For exercising such control, the Engineer-in-charge shall periodically depute his authorized representative at the RMC/Asphalt plant. It shall be responsibility of the contractor to ensure that all necessary equipment, manpower & facilities are made available to the Engineer-in-charge and or his authorized representative at RMC/Asphalt plant.
 - f) All required relevant records of RMC/Asphalt mix shall be made available to the Engineer-in-charge or his authorized representative. Engineer-in-charge shall, as required, specify guidelines & additional procedures for quality control & other parameters in respect of material production & transportation of concrete mix which shall be binding on the contractor & the RMC/Asphalt plant. Only concrete as approved in design mix by Engineer-in-charge shall be produced in RMC plant and transported to the site.

- g) The contactor shall have to produce a copy of challan receipts/SCADA reports/VTS reports as issued by the RMC/Asphalt plant as a documentary proof in lieu of supply of RMC/Asphalt mix before releasing payment.

28 Identifying Defects

- 28.1 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.
- 28.2 The Contractor shall permit the Employer's technical person(s) to check the Contractor's work and notify the Engineer and Contractor if any defects that are found.

29 Tests

- 29.1 For carrying out mandatory tests as prescribed in the specifications, the Contractor shall establish field laboratory at the location decided by Engineer. The field laboratory will have minimum of equipment's as specified in the Contract Data. The contractor shall be solely responsible for:
- a. Carrying out the mandatory tests prescribed in the Specifications, and
 - b. For the correctness of the test results, whether preformed in his laboratory or elsewhere.
- 29.2 If the Engineer instructs the Contractor to carry out a test not specified in the Specification/ Quality Assurance Handbook 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.
- When required by the Engineer-in-charge the contractor(s) shall supply for the purpose of testing samples of all materials proposed to be used in the works. Samples submitted either to govern bulk supplies or required for testing before use shall be in suitable packages to contain them and shall be provided free of charge by the contractor. The cost of testing shall be borne by the contractor even if the result of the sample confirm or do not confirm to the relevant BIS code specifications.
- i. All expenditure required to be incurred for taking the samples conveyance, packing shall be borne by the contractor himself.
 - ii. The failed material shall be removed from the site by the contractor at his own cost within a week time of written order of the Engineer-in-charge.

29.3 Setting of Site Laboratories: (NA) NOT APPLICABLE

Contractors shall set up a laboratory at site before commencement of work at their cost for performing various tests and at least the following machines and equipment's shall be provided therein -

The contractor shall install testing equipment at site. The contractor shall ensure and certify the calibration of the equipment so installed and shall maintain the same in working order throughout the period of construction. The contractor shall also provide necessary technically qualified experienced trained staff for carrying out such tests for using such equipment. The tests shall be carried out under the supervision of the Engineer-in-charge. The calibration shall be checked every twelve months as directed by Engineer-in-charge.

30 Correction of Defects noticed during the Defects Liability Period.

30.1.

- a) Period shall be extended for as long as Defects remain to be corrected.
- b) Every time notice of Defect/Defects is given, the Contractor shall correct the notified Defect/Defects within the duration of time specified by the Engineer's notice.
- c) The Engineer may issue notice to the Contractor to carry out removal of defects or deficiencies, if any, noticed in his inspection, or brought to his notice. The Contractor shall remove the defects and deficiencies within the period specified in the notice and submit to the Engineer a compliance report.

31 Uncorrected Defects and Deficiencies

31.1 If the Contractor has not corrected a Defect pertaining to the Defect Liability Period under clause and deficiencies in maintenance, to the satisfaction of the Engineer, within the time specified in the Engineer's notice, the Engineer will assess the cost of having the Defect or deficiency corrected, and the Contractor shall pay this amount, on correction of the Defect or deficiency by another agency

D. Cost Control

Variations :-

The Engineer shall, having regard to the scope of the Works and the sanctioned estimated cost, have power to order, in writing, Variations within the scope of the Works he considers necessary or advisable during the progress of the Works. Such Variations shall form part of the Contract and the Contractor shall carry them out and include them in updated Programmes produced by the Contractor. Oral orders of the Engineer for Variations, unless followed by written confirmation, shall not be taken into account.

32 Payments for Variations

32.1 If rates for Variation items are specified in the Bill of Quantities, the Contractor shall carry out such work at the same rate.

32.2 The rate for Extra/Excess shall be governed by clause 10.A of Standard General Condition of Contract

33 Cash Flow Forecasts

When the Programme is updated, the Contractor shall provide the Engineer with an updated cashflow forecast.

34 Payment Certificates

The payment to the Contractor will be as follows for construction work:

- a) A bill shall be submitted by the Contractor monthly or before the date fixed by the Engineer In-charge for all works executed in the previous month, and the Engineer In-charge shall take or cause to be taken requisite measurement for the purpose of having the same verified and the claim, so far as it is admissible, shall be adjusted, if possible, within 30 days from the presentation of the bill. If the contractor does not submit the bill within the time fixed as aforesaid, the Engineer In-charge may depute a subordinate to measure up the said work in the presence of the contractor or his duly authorized agent whose counter signature to the measurement list shall be sufficient warrant, and Engineer In- Charge may prepare a bill from such list which shall be binding on the contractor in all respects.
- b) The Engineer shall check the Contractor's fortnightly/monthly statement within 30 days and certify the amount to be paid to the Contractor.
- c) The value of work executed shall be determined, based on measurements by the Engineer.
- d) The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.

- e) The value of work executed shall also include the valuation of Variations and Compensation Events.
- f) 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.
- g) The contractor shall submit all bills on the printed forms at the office of Engineer In-charge. The charges to be made in the bills shall always be entered at the rates specified in tender.

35 Payments

35.1 Payments shall be adjusted for deductions for advance payments, retention, security deposit, other recoveries in terms of the Contract and taxes at source, as applicable under the law. The Employer shall pay the Contractor the amounts certified by the Engineer within 30 days of the date of each certificate.

35.2 All sums payable by a contractor by way of compensation under any of these conditions, shall be considered as a reasonable compensation to be applied to the use of BMC without reference to the actual loss or damage sustained and whether any damage has or has not been sustained.

35.3 No payment shall be made for any work estimated to cost less than Rupees One Thousand till after the whole of work shall have been completed and the certificate of completion given. But in the case of works estimated to cost more than Rs. One Thousand, the contractor shall on submitting a monthly bill therefore be entitled to receive payment proportionate to the part of the work than approved and passed by the Engineer In-charge, whose certificate of such approval and passing of the sum so payable shall be final and conclusive against the contractor. All such intermediate payments shall be regarded as payments by way of advance against the final payments only and not as payments for work actual done and completed and shall not preclude the Engineer In-charge from requiring any bad, unsound, imperfect or unskillful work to be removed or taken away and reconstructed or re-erected nor shall any such payment be considered as an admission of the due performance of the contract or any part thereof in any respect or the offering of any claim not shall it conclude, determine or effect in any other way, the powers of the Engineer In-charge as to the final settlement and adjustment of the accounts or otherwise, or in any other way vary or effect the contract. The final bill shall be submitted by the Contractor within one month of the date fixed for the completion of the work otherwise the Engineer In-charge's certificate of

the measurements and of the total amount payable for the work shall be final and binding on all parties.

- 36 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor for not having given early warning or not having cooperated with the Engineer.

37 **Tax (As per circular u/no/ CA/F/P/28/Dated 28.03.2023)**

The tenderer shall quote inclusive of all taxes other than GST (Excluding GST), Levies, Duties, Cess etc as applicable at the time of bid submission. GST as applicable shall be paid separately on submission of bills/invoice.

Input Tax Credit of GST as available with the bidder will not be claim separately by BMC. However, while quoting the rates benefit of Input Tax Credit or Exemptions shall be passed on to the BMC by way of equivalent reduction in quoted price.

38 **Currencies**

All payments will be made in Indian Rupees.

41 . **Liquidated Damages**

Both, the Contractor and the Employer have agreed that it is not feasible to precisely estimate the amount of losses due to delay in completion of works and the losses to the public and the economy, therefore, both the parties have agreed that the Contractor shall pay liquidated damages to the Employer and not by way of penalty, at the rate per week or part thereof stated in the Contract Data for the period that the Completion Date is later than the Intended Completion Date. Liquidated damages at the same rates shall be withheld if the Contractor fails to achieve the milestones prescribed in the Contract Data. However, in case the Contractor achieves the next milestone, the amount of the liquidated damages already withheld shall be restored to the Contractor by adjustment in the next payment certificate. The Employer and the contractor have agreed that this is a reasonable agreed amount of liquidated damage. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's other liabilities.

39 **Cost of Repairs**

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 his cost if the loss or damage arises from the Contractor's acts or omissions.

D. Finishing the Contract

40 **Completion of Construction and Maintenance**

42.1. The Contractor shall request the Engineer to issue a certificate of completion of the construction of the works, and the Engineer will do so upon deciding that the works is

completed. This shall be governed as per clause no.8(g) of Standard General Conditions of Contract.

41 Taking Over

43.1. The Employer shall take over the works within seven days of the Engineer issuing a certificate of completion of works. The Contractor shall continue to remain responsible for its routine maintenance during the maintenance period if specified in the contract.

42 Final Account

Final joint measurement along with the representatives of the contractor should be taken recorded and signed by the Contractors. Contractors should submit the final bill within 1 month of physical completion of the work.

If the contractor fails to submit the final bill within 1 month, the BMC staff will prepare the final bill based on the joint measurement within next 3 months.

Engineer's decision shall be final in respect of claims for defect and pending claims against contractors.

No further claims should be made by the Contractor after submission of the final bill and these shall be deemed to have been waived and extinguished. Payment of those items of the bills in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by the Commissioner shall be made within a reasonable period as may be necessary for the purpose of verification etc.

After payment of the final bill as aforesaid has been made, the contractor may, if he so desires, reconsider his position in respect of a disputed portion of the final bills and if he fails to do so within 84 days, his disputed claim shall be dealt with as provided in the contract.

The amount as indicated below shall be held back from payments till the finalization of final bill to be submitted as per above and will be paid within 30 days of acceptance of the final bill.

Sr.No.	Amount of Contract Cost	Minimum Payable Amount in final bill
1	Up to Rs.5 Crs.	Rs.10 Lacs or final bill whichever is more
2	Up to Rs.25 Crs.	Rs.1 Crore or final bill amount whichever is more
3	Up to Rs. 50 Crs.	Rs.2 Crores or final bill amount whichever is more
4	Up to Rs.100 Crs.	Rs.4 Crore or final bill amount whichever is more
5	More than Rs.100 Crs.	Rs.7 Crore or final bill amount whichever is more

The contractor has to submit the bill for the work carried out within 15 days from the date of completion of the work to the respective executing department. If the contractor fails to submit their bills to concerned executing department, penalty or action as shown below will be taken for each delayed bill:-

After 15 days from the date of completion/running bill up to certain date, up to next 15 days i.e. up to 30 days	Equal to 5% of bill amount
Next 15 days up to 45 days from the date of completion/running bill up to specified date	Equal to 10% of bill amount
If not submitted within 45 days from the date of completion/ R.A. bill	Bill will not be admitted for payment.

43 **Operating and Maintenance Manuals**

- 43.1 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.
- 43.2 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.

44 **Termination**

- 44.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.
- 44.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following:
- a) the Contractor stops work for 30 days when no stoppage of work is shown on the current Programme and the stoppage has not been authorized by the Engineer;
 - b) the Contractor is declared as bankrupt or goes into liquidation other than for approved reconstruction or amalgamation;
 - c) the Engineer gives Notice that failure to correct a 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;
 - d) the Contractor does not maintain a Security, which is required;
 - e) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in relevant clause.
 - f) the Contractor fails to provide insurance cover as required under relevant clause.
 - g) if the Contractor, in the judgment of the Employer, has engaged in the corrupt or fraudulent practices as defined in GCC in competing for or in executing the Contract.
 - h) if the Contractor fails to set up a field laboratory with the prescribed equipment, within the period specified in the Contract Data; and
 - i) any other fundamental breaches as specified in the Contract Data.
 - j) if the Contractor fails to deploy machinery and equipment or personnel as specified in the Contract Data at the appropriate time.

44.3 When either party to the contract gives notice of a breach of contract to the Engineer for a cause other than those listed above, the Engineer shall decide whether the breach is fundamental or not.

44.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.

44.5 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.

45 Payment upon Termination

45.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a certificate for value of the work done and materials ordered less liquidated damages, if any, less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the Contract Data. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be recovered from the security deposit, and performance security. If any amount is still left unrecovered it will be a debt due from the Contractor to the Employer

45.2 If the Contract is terminated at the Employer's convenience, the Engineer shall issue a certificate for the value of the work done, 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.

46 Property

48.1. All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer for use for completing balance construction work if the Contract is terminated because of the Contractor's default, till the Works is completed after which it will be transferred to the Contractor and credit, if any, given for its use.

47 Release from Performance

If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of 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 a commitment was made.

A) Other Conditions of Contract

48 Labour

- 48.1 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.
- 48.2 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 number 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.

49 Compliance with Labour Regulations

- a) 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.
- b) Furthermore, 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 guarantee. 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.
- c) The Contractor shall require his employees to obey all applicable laws, including those concerning safety at work.
- d) 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.

50 Drawings and Photographs of the Works

50.1 The Contractor shall do photography/video photography of the site firstly before the start of the work, secondly mid-way in the execution of different stages of work as required by Engineer In-charge and lastly after the completion of the work. No separate payment will be made to the Contractor for this.

50.2 The Contractor shall not disclose details of Drawings furnished to him and works on which he is engaged without the prior approval of the Engineer in writing. No photograph of the works or any part thereof or plant employed thereon, except those permitted under above clause, shall be taken or permitted by the Contractor to be taken by any of his employees or any employees of his sub-Contractors without the prior approval of the Engineer in writing. No photographs/ Video photography shall be published or otherwise circulated without the approval of the Engineer in writing.

51 The Apprentices Act, 1961

The Contractor shall duly comply with the provisions of the Apprentices Act 1961 (III of 1961), the rules made there under and the orders that may be issued from time to time under the said Act and the said Rules and on his failure or neglect to do so, he shall be subject to all liabilities and penalties provided by the said Act and said Rules.

52 Contract Document

The documents forming the contract are to be taken as mutually explanatory of one another. Unless otherwise provided in the contract, the priority of the documents forming the contract shall be, as follows:

1. Contract Agreement (if completed)
2. The letter of Acceptance
3. The Bid:
4. Addendum to Bid; if any
5. Tender Document
6. The Bill of Quantities:
7. The Specification:
8. Detailed Engineering Drawings
9. Standard General Conditions of Contracts (GCC)
10. All correspondence documents between bidder/contractor and BMC.

53 Conflict of Interest

The Applicant shall not have a conflict of interest (the “Conflict of Interest”) that affects the Bidding Process. Any Applicant found to have a Conflict of Interest shall be disqualified. An Applicant shall be deemed to have a Conflict of Interest affecting the

Bidding Process, if

1. A constituent of such Applicant is also a constituent of another Applicant; or
2. Such Applicant has the same legal representative for purposes of this Application as any other Applicant; or
3. Such Applicant, or any Associate thereof has a relationship with another Applicant, or any Associate thereof, directly or through common third party/parties, that puts either or both of them in a position to have access to each other's information about, or to influence the Application of either or each other; or
4. The Applicant shall be liable for disqualification if any legal, financial or technical adviser of the Authority in relation to the Project is engaged by the Applicant, its Member or any Associate thereof, as the case may be, in any manner for matters related to or incidental to the Project. For the avoidance of doubt, this disqualification shall not apply where such adviser was engaged by the Applicant, its Member or Associate in the past but its assignment expired or was terminated 6 (six) months prior to the date of issue of this TENDER. Nor will this disqualification apply where such adviser is engaged after a period of 3 (three) years from the date of commercial operation of the Project.

54 Applications and costs thereof

No Applicant shall submit more than one Application for the Project. An applicant applying individually shall not be entitled to submit another application either individually. The Applicant shall be responsible for all of the costs associated with the preparation of their Applications and their participation in the Bid Process. The Authority will not be responsible or in any way liable for such costs, regardless of the conduct or outcome of the Bidding Process.

55 Acknowledgment by Applicant

It shall be deemed that by submitting the Application, the Applicant has:

- a. made a complete and careful examination of the tender;
- b. received all relevant information requested from the Authority;
- c. accepted the risk of inadequacy, error or mistake in the information provided in the tender or furnished by or on behalf of the Authority relating to any of the matters referred; and
- d. Agreed to be bound by the undertakings provided by it under and in terms hereof.

“The Authority” shall not be liable for any omission, mistake or error in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to the TENDER or the Bidding Process, including any error or mistake therein or in any information or data given by the Authority.

56 Right to accept or reject any or all Applications/ Bids

Notwithstanding anything contained in this TENDER, “The Authority” reserves the right to accept or reject any Application and to annul the Bidding Process and reject all Applications/ Bids, at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons therefore. In the event that the Authority rejects or annuls all the Bids, it may, in its discretion, invite all eligible Bidders to submit fresh Bids hereunder.

“The Authority” reserves the right to reject any Application and/ or Bid if:

- a) at any time, a material misrepresentation is made or uncovered, or
 - b) the Applicant does not provide, within the time specified by the Authority, the supplemental information sought by the Authority for evaluation of the Application.
- In case it is found during the evaluation or at any time before signing of the Agreement or after its execution and during the period of subsistence thereof including the concession thereby granted by “The Authority”, that one or more of the prequalification conditions have not been met by the Applicant, or the Applicant has made material misrepresentation or has given any materially incorrect or false information, the Applicant shall be disqualified forthwith if not yet appointed as the Successful Bidder either by issue of the LOA (Letter of Approval) or entering into of the Agreement, and if the Applicant has already been issued the LOA or has entered into the Concession Agreement, as the case may be, the same shall, notwithstanding anything to the contrary contained therein or in this TENDER, be liable to be terminated, by a communication in writing by “The Authority” to the Applicant, without the Authority being liable in any manner whatsoever to the Applicant and without prejudice to any other right or remedy which the Authority may have under this TENDER, the Bidding Documents, the Concession Agreement or under applicable law.

“The Authority” reserves the right to verify all statements, information and documents submitted by the Applicant in response to the TENDER. Any such verification or lack of such verification by the Authority shall not relieve the Applicant of its obligations or liabilities hereunder nor will it affect any rights of the

Authority there under.

57 The bid shall be rejected if the bidder-

- a. Stipulates the validity period less than 180 days.
- b. Stipulates own condition/conditions.
- c. Does not fill and (digital) sign undertaking forms, which are incorporated, in the document.

58 Clarifications

Applicants requiring any clarification on the tender may notify “the Authority” in writing or by fax or email. They should send in their queries before the date specified in the header data. “The Authority” shall Endeavor to respond to the queries within the period specified therein. The responses will be sent by fax and/or e-mail. The Authority will forward all the queries and its responses thereto, to all purchasers of the TENDER without identifying the source of queries.

“The Authority” shall Endeavor to respond to the questions raised or clarifications sought by the Applicants. However, the Authority reserves the right not to respond to any question or provide any clarification, in its sole discretion, and nothing in this Clause shall be taken or read as compelling or requiring the Authority to respond to any question or to provide any clarification, but not later than the date provided in header data.

“The Authority” may also on its own motion, if deemed necessary, issue interpretations and clarifications to all Applicants. All clarifications and interpretations issued by the Authority shall be deemed to be part of the tender. Verbal clarifications and information given by Authority or its employees or representatives shall not in any way or manner be binding on the Authority.

59 Amendment of tender

At any time prior to the deadline for submission of Application, the Authority may, for any reason, whether at its own initiative or in response to clarifications requested by an Applicant, modify the tender by the issuance of Addendum.

Any Addendum thus issued will be sent in writing/ Fax/ Email to all those who have purchased the tender.

In order to afford the Applicants a reasonable time for taking an Addendum into account, or for any other reason, the Authority may, in its sole discretion, extend the Application Due Date.

Preparation and Submission of Application

60 Language

The Application and all related correspondence and documents in relation to the Bidding Process shall be in English language. Supporting documents and printed literature furnished by the Applicant with the Application may be in any other language provided that they are accompanied by translations of all the pertinent passages in the English language, duly authenticated and certified by the Applicant. Supporting materials, which are not translated into English, may not be considered. For the purpose of interpretation and evaluation of the Application, the English language translation shall prevail.

61 Format and signing of Application

The Applicant shall provide all the information sought under this TENDER. The Authority will evaluate only those Applications that are received in the required formats and complete in all respects. Incomplete and /or conditional Applications shall be liable to rejection. The Applicant will upload bid in One Folder in electronic form which shall contain the scanned certified copies of the documents given below and the documents uploaded has to be digitally signed by the bidder. These copies shall be certified by Practicing Notary approved by the Govt. of Maharashtra or Govt. of India with his stamp, clearly stating his name & registration number, except where original documents are demanded

62 Marking of Applications

The Applicant shall submit the Application in the format specified at Appendix-I, together with the documents, upload in folder as “VENDOR” together with their respective enclosures.

Applications submitted by fax, telex, telegram shall not be entertained and shall be rejected outright.

63 Late Applications

Applications received by the Authority after the specified time on the Application Due Date shall not be eligible for consideration and shall be summarily rejected.

64 Confidentiality

Information relating to the examination, clarification, evaluation, and recommendation for the short-listed qualified Applicants shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional advisor advising the Authority in relation to or matters arising out of, or concerning the Bidding Process. The Authority will treat all information, submitted as part of Application, in confidence and will require all those who have access to such material to treat the same in confidence.

The Authority may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert any right or privilege of the statutory entity and/ or the Authority or as may be required by law or in connection with any legal process.

65 Clarification of Financial Bids

To assist in the examination, evaluation and comparison of Bids, the Engineer may, at his discretion, ask any bidder for clarification of his Bid, including breakdown of unit rates. The request for clarification and the response shall be in writing or by post/facsimile/e- mail. No Bidder shall contact the Engineer on any matter relating to his bid from the time of the bid opening to the time the contract is awarded. Any effort by the Bidder to influence the Engineer in the Engineer's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidder's bid.

66 Inspection of site and sufficiency of tender:

1. The Contractor shall inspect and examine the site and its surrounding and shall satisfy himself before submitting his tender as to the nature of the ground and subsoil (so far as is practicable), the form and nature of the site, the quantities and nature of the work and materials necessary for the completion of the works and means of access to the site, the accommodation he may require and in general shall himself obtain all necessary information as to risk, contingencies and other circumstances which may influence or affect his tender. He shall also take into consideration the hydrological and climatic conditions.
2. The Employer may make available to the Contractor data on hydrological and sub- surface conditions as obtained by or on his behalf from investigations relevant to the works but the Contractor shall be responsible for his own interpretation thereof. The contractor shall engage his investigating agency with prior approval of the Engineer from the approved list of such agencies by BMC or Govt at his cost initially before commencing actual work and which shall be reimbursed immediately subject to satisfaction of the Engineer for faithful compliance and submission of required data regarding such investigation within specified time.
3. The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices quoted in the schedule of works / items / quantities, or in Bill of Quantities, which rates and prices shall, except as otherwise provided cover all his obligations

under the Contract and all matters and things necessary for proper completion and maintenance of the works. No extra charges consequent on any misunderstanding.

4. **Not Foreseeable Physical Obstructions or Conditions:** If, however, during the execution of the Works the Contractor encounters physical obstructions or physical conditions, other than climatic conditions on the Site, which obstructions or conditions were, in his opinion, not foreseeable by an experienced contractor, the Contractor shall forthwith give notice thereof to the Engineer. On receipt of such notice, the Engineer shall, if in his opinion such obstructions or conditions could not have been reasonably foreseen by an experienced contractor, after due consultation with the Contractor, determine:

- any extension of time to which the Contractor is entitled and
- The amount of any costs which may have been incurred by the Contractor by reason of such obstructions or conditions having been encountered, which shall be added to the Contract Price, and shall notify the Contractor accordingly.
- Such determination shall take account of any instruction which the Engineer may issue to the Contractor in connection therewith, and any proper and reasonable measures acceptable to the Engineer which the Contractor may take in the absence of specific instructions from the Engineer. However such costing shall be got approved by the competent authority as governed vide rules prevailing with authority.

5. **Office for the Engineer (Works costing up to Rs.50 Lakhs)**

The Contractor shall at his own cost and to satisfaction of the Engineer provide a small temporary office, at the work-site which will include tables, chairs and lockers for keeping the records. He shall also make necessary arrangements for drinking water, telephone with a pre-requisite of e-governance and electronic communication. These offices are not to be allowed on public roads without the written instruction of the Engineer. These offices should be preferably located within 50 to 500 m of the worksite. In case the office is more than 500m away from the worksite, the contractor is to provide conveyance for Municipal Staff.

6. **Office for the Engineer (Works costing above Rs.50 lakhs)**

The Contractor shall at his own cost and to satisfaction of the Engineer provide a temporary office at the work-site which will include tables, chairs and lockers for keeping the records. He shall also make necessary arrangements for drinking

water, latrines, with doors, windows, locks, bolts and fastenings sufficient for security for the Engineer, and his subordinates, as close to the works from time to time in progress as can be conveniently arranged, and shall at his own cost furnish the office with such chairs, tables, lockers, locks and fastenings as may be required by the Engineer, and no expense of any kind in connection with the erection or upkeep of the offices or fittings shall be borne by the Corporation, but all such work shall be carried out by the Contractor and the expenses thereof defrayed by him. The Contractor shall also make water connections and fit up stand pipe with a bib tap at each office. The latrines and the water connections shall be subject to all the conditions herein elsewhere laid down for temporary water connection and latrines generally with all requisite equipment's for e-governance and electronic and digital communication. These offices are not to be allowed on public roads without the written instruction of the Engineer. These offices should be preferably located within 50 to 500 m of the worksite. In case the office is more than 500m away from the worksite, the contractor is to provide conveyance. Also, for staff working beyond working hours the contractor has to provide conveyance.

7. **Permission for provision and removal of office on completion of work:** The tenderer shall obtain permission for provision of site office, cement go-down, store, etc. on payment of necessary cost implication. The cement go-down, Watchman cabins, etc. shall be provided as directed and shall be removed by the Tenderers on completion of the work at their cost. It is binding on the Tenderer to fulfill requirements of Environmental Authorities. The location of such office shall be finalized and got approved from the Engineer before erection/commencement work.
8. **Contractor's office near works:** The Contractor shall have an office near the works at which notice from the Commissioner or the Engineer may be served and shall, between the hours of sunrise and sunset on all working days, have a clerk or some other authorized person always present at such office upon whom such notices may be served and service of any notices left with such clerk or other authorized person or at such office shall be deemed good service upon the Contractor and such offices shall have pre-requisite facilities for e-governance.

67 Official Secrecy:

The Contractor shall of all the persons employed in any works in connection with the

contract that the India Official Secrets Act 1923 (XIX of 1923) applies to them and will continue to apply even after execution of the said works and they will not disclose any information regarding this contract to any third party. The contractor shall also bring into notice that, any information found to be leaked out or disclosed to the concerned person as well as the Contractor will be liable for penal action; further the Corporation will be at liberty to terminate the contract without notice.

68 Subsequent Legislation:

If on the day of submission of bids for the contract, there occur changes to any National or State statute, Ordinance, decree or other law or any regulation or By-laws or any local or other duly constituted authority or the introduction of any such National or State Statute, Ordinance, decree or by which causes additional or reduced cost to the Contractor, such additional or reduced cost shall, after due consultation with the Contractor, be determined by the concerned Engineering Department of BMC and shall be added to or deducted from the Contract Price with prior approval of competent authority and the concerned Engineering Department shall notify the Contractor accordingly with a copy to the Employer. BMC reserve the right to take decision in respect of addition/reduction of cost in contract.

69 Patent, Right and Royalties:

The contractor shall save harmless and indemnify the Corporation from and against all claims and proceedings for or on account of infringement of any Patent rights, design trademark or name of other protected rights in respect of any constructional plant, machine work, or material used for or in connection with the Works or any of them and from and against all claims, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto. Except where otherwise specified, the contractor shall pay all tonnage and other royalties, rent and other payments or compensation, if any, for getting stone, sand, gravel, clay or other materials required for the works or any of them.

70 Payments, Tax and Claims:

- **The limit for unforeseen claims**

Under no circumstances whatever the contractor shall be entitled to any compensation from BMC on any account unless the contractor shall have submitted a claim in writing to the Eng-in- change within 1 month of the case of such claim occurring.

- **No interest for delayed payments due to disputes, etc:**

It is agreed that the Brihanmumbai Municipal Corporation or its Engineer or Officer

shall not be liable to pay any interest or damage with respect of any moneys or balance which may be in its or its Engineer's or officer's hands owing to any dispute or difference or claim or misunderstanding between the Municipal Corporation of Greater Bombay or its Engineer or Officer on the one hand and the contractor on the other, or with respect to any delay on the part of the Municipal Corporation of Greater Bombay or its Engineer or Officers in making periodical or final payments or in any other respect whatever.

71 Settlement of Disputes:

- **Termination of contract for death**

If the Contractor is an individual or a proprietary concern and the individual or the proprietor dies and if the Contractor is a partnership concern and one of the legal representative of the individual Contractor or the proprietor of the proprietary concern and in case of partnership, the surviving partners, are capable of carrying out and completing the contract, the Commissioner shall be entitled to cancel the contract as to its uncompleted part without the Corporation being in any way liable to payment of any compensation to the estate of the deceased Contractor and or to the surviving partners of the Contractor's firm on account of the cancellation of the contract. The decision of the Commissioner that the legal representative of the deceased Contractor or surviving partners of the Contractor's firm cannot carry out and complete the contract shall be final and binding on the parties. In the event of such cancellation the Commissioner shall not hold estate of the deceased Contractor and or surviving partners of the Contractor's firm liable in damages for not completing the contract.

- **Settlement of Disputes:**

If any dispute or differences of any kind whatsoever other than those in respect of which, the decision of any person is, by the Contract, expressed to be final and binding) shall arise between the Employer and the Contractor or the Engineer and the Contractor in connection with or arising out of the Contract or carrying out of the Works (Whether during the progress of the Works or after their completion and whether before or after the termination, abandonment or breach of the Contract) it, the aggrieved party may refer such dispute within a period of 7 days to the concerned Addl. Municipal Commissioner who shall constitute a committee comprising of three officers i.e. concerned Deputy Municipal Commissioner or Director (ES&P), Chief Engineer other than the Engineer of the Contract and concerned Chief Accountant.

The Committee shall give decision in writing within 60 days. Appeal on the Order of the Committee may be referred to the Municipal Commissioner within 7 days. Thereafter the Municipal Commissioner shall constitute a Committee comprising of three Addl. Municipal Commissioners including Addl. Municipal Commissioner in charge of Finance Department. The Municipal Commissioner within a period of 90 days after being requested to do so shall give written notice of the committee's decision to the Contractor. Save as herein provided such decision in respect of every matter so referred shall be final and binding upon both parties until the completion of the works, and shall forthwith be given effect to by the Contractor who shall proceed with the works with due diligence, whether he requires arbitration as hereinafter provided or not. If the Commissioner has given written notice of the decision to the Contractor and no Claim to arbitration has been communicated within a period of 90 days from receipt of such notice the said decision shall remain final and binding upon the Contractor.

72 Arbitration and Jurisdiction:

If the Commissioner shall fails to give notice of the decision as aforesaid within a period of 90 days after being requested as aforesaid or if the Contractor be dissatisfied with any such decision, then the Contractor may within 90 days after receiving notice of such decision or within 90 days after the expirations of the first named period of 90 days (as the case may be) require that the matter or matters in dispute be referred to arbitration as hereinafter provided.

- i) In case of a contract where the contract price and /or contract value is less than Rs. 5,00,00,000/- (Five Crore only), any dispute arising out of or in connection with this contract, including any question regarding its existence, validity or termination, shall be referred to a mutually agreed arbitral tribunal in accordance with the Arbitration and Conciliation Act, 1996 (amended upto date). The arbitral tribunal shall consist of a sole arbitrator, as mutually agreed upon by the parties and the said dispute shall be finally resolved by the said arbitral tribunal. The decision of the arbitral tribunal shall be in writing (with reasons) and which will be final and binding upon the parties hereto and the expenses of the arbitration shall be paid as may be determined by the arbitration shall be within the limits of Brihan Mumbai. The language of The Arbitration shall be English. If the parties fail to appoint mutually agreed arbitral tribunal, within the period of 30 days from the date of application seeking arbitration in the dispute, the arbitral tribunal shall be appointed by the recognised arbitral institution i.e Mumbai Centre for

International Arbitration (approved by Government of Maharashtra under G.R. no. ARB/Case No.1,/2017/D-19 dtd.28.02.2017) as per the Arbitration Rules of the Mumbai Centre for International Arbitration then in force (“MCIA Rules”)

- ii) In case of contract where the contract price and /or contract value is Rs. 5,00,00,000/- (Five Crore only) or more, any dispute arising out of or in connection with such a contract, including any question regarding its existence, validity or termination, shall be referred to and finally resolved by the recognized arbitral institution i.e Mumbai Centre for International Arbitration (approved by Government of Maharashtra under G.R. no. ARB/Case No.1,/2017/D-19 dtd.28.02.2017) as per the Arbitration Rules of the Mumbai Centre for International Arbitration then in force (“MCIA Rules”). The arbitral tribunal shall consist of a sole arbitrator. The seat of the arbitration shall be Mumbai. The language of the Arbitration shall be English.

In either case, the law governing this arbitration agreement and the contract shall be Indian law.

73 Copyright:

The copyright of all drawings and other documents provided by the Contractor under the contract shall remain vested in the Contractor or his subcontractors as the case may be the employer shall have a license to use such drawings and other documents in connection with the design, construction, operation, maintenance of the works. At any time the Employer shall have further license without additional payment to the Contractor to use any such drawings or documents for the purpose of making any improvement of the works or enlargement or duplication of any part thereof, provided that such improvement, enlargement, or duplication by itself or in conjunction with any other improvements, enlargements or duplications already made in accordance with the further license does not result in the duplication of the whole works.

74 Receipts to be signed in firm’s name by any one of the partners:

Every receipt for money which may become payable or for any security which may become transferable to the Contractor under these present shall, if signed in the partnership name by any one of the partners, be a good and sufficient discharge to the Commissioner and Municipal Corporation in respect of the money or security purporting to be acknowledged thereby, and in the event of death of any of the partners during the pendency of this contract, it is hereby expressly agreed that every receipt by any one of the surviving partners shall, if so signed as aforesaid, be good and sufficient discharge as aforesaid

provided that nothing in this clause contained shall be deemed to prejudice or effect any claim which the Commissioner or the Corporation may hereafter have against the legal representatives of any partners so dying or in respect of any breach of any of the conditions thereof, provided also that nothing in this clause contained shall be deemed prejudicial or affect the respective rights or obligations of the Contractors and of the legal representatives of any deceased Contractors interest.

75 Proprietary data

All documents and other information supplied by the Authority or submitted by an Applicant to the Authority shall remain or become the property of the Authority.

Applicants are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Application. The Authority will not return any Application or any information provided along therewith.

76 Correspondence with the Applicant

Save and except as provided in this TENDER, the Authority shall not entertain any correspondence with any Applicant in relation to the acceptance or rejection of any Application.

77 Price Variation Clause NOT APPLICABLE TO THIS TENDER

The Contractor shall be reimbursed or shall refund to the Corporation as he case may be the variation in the value of the work carried out from time to time, depending on whether the prices of material and labour as a whole rise or fall, and the method adopted for such computations shall be as given below, it being clearly understood that the contractor shall have no claim for being reimbursed on the ground that the price of a particular material or group of materials have risen beyond the limits of the presumptions made in the following paras, however, no price variations shall be made applicable for contracts up to 12 months:

- A) **Controlled materials:** Price variations shall be permitted in respect of these materials the price level of which is controlled by the Government or its agency. The rate ruling on the date of submission of the tender shall be considered as the basic price of such material for adjustment. Any variation in this rate shall be considered for reimbursement to the contractor or refund to be claimed from the contractor as the case may be. The contractor shall, for the purpose of adjustment submit in original the relevant documents from the suppliers.
- B) **Labour and other materials:** For the purpose of this contract and for allowing reimbursement of refund on account of variation of prices of (i) labour, and (ii)

materials other than materials mentioned in A above, computation will be based on the formula enunciated below which is based on the presumptions that :

- i) The general price level of labour, rises or falls in proportion to the rise or fall of consumer price index number 9 (general) for working class in Mumbai.
- ii) The general price level of materials rises or falls in proportion to rise or fall of the whole-sale price index as published by 'Economic Adviser to Govt. of India'.
- iii) And that the component of labour is to the extent of 30 percent of 88 percent and the component of materials is to the extent of 70 percent of 88 percent of the value of the work carried out. The remaining 12 percent being the presumptive profit of the contractor.

Formula for Labour component:

$$VL = \frac{(0.88 R) \times 30}{100} \times \frac{(I - IO)}{IO}$$

- a) Formula for Material component :

$$VM = \frac{(0.88 R \times 70 - C)}{100} \times \frac{(W - WO)}{WO}$$

Where -

VL = Amount of price variation to be reimbursed or claimed as refund on account of general rise or fall of index referred to above.

I = Consumer Price Index number of working class for Mumbai declared by the Commissioner of Labour and Director of Employment, Mumbai) applicable to the period under reference (base year ending 2004-05 as 100 i.e. new series of indices).

IO = Consumer price index number for working class for Mumbai (declared by the Commissioner of labour and Director of Employment, Mumbai) prevailing, on the day of 28 days prior to the date of submission of the tender.

VM = The amount of price variation to be reimbursed or claimed as refund on account of general rise or fall of wholesale price index for period under reference.

W = Average wholesale price index as published by Economic Adviser to Govt. of India applicable to the period under reference.

WO = Wholesale price index as stated above prevailing on the day of 28 days prior

to the date of submission of the tender.

R = Total value of the work done during the period under reference as recorded in the Measurement Book excluding water charges and sewerage charges but including cost of excess in respect of item upto 50 percent

C = Total value of Controlled materials used for the works as recorded in Measurement Book and paid for at original basic rate plus the value of materials used.

- i) The quantity of the Controlled material adopted in working out the value of 'C' shall be inclusive of permitted wastages as / if mentioned in specifications.
- ii) The basic rate for the supply of controlled material shall be inclusive of all the components of cost of materials excluding transport charges incurred for bringing the material from place of delivery to the site.

Computations based on the above formula will be made for the period of each bill separately and reimbursement will be made to (when the result is plus) and refund will be claimed from (when the result is minus) the contractor's next bill. The above formulae will be replaced by the formulae in Annexure-I as and when mentioned in special conditions of contract

The operative period of the contract for application of price variation shall mean the period commencing from the date of commencement of work mentioned in the work order and ending on the date when time allowed for the work order and ending on the date when time allowed for the work specified in the contract for work expires, taking into consideration, the extension of time, if any, for completion of the work granted by Engineer under the relevant clause of the conditions of contract in cases other than those where such extension is necessitated on account of default of the contractor.

The decision of the Engineer as regards the operative period of the contract shall be final and binding on the contractors.

- iii) Where there is no supply of controlled items to contractor the component 'C' shall be taken as zero.
- C) Adjustment after completion: If the Contractor fails to complete the works within the time for completion adjustment of prices thereafter until the date of completion of the works shall be made using either the indices or prices relating to the prescribed time for completion, or the current indices or prices whichever is more favorable to

the employer, provided that if an extension of time is granted, the above provision shall apply only to adjustments made after the expiry of such extension of time.

- D) Price variation will be calculated similarly and separately for extra items and / or excess quantities and provisional sums calculated under Sub Clause 10 (b)A i)&(ii) and Sub Clause 10 (b) B(ii) based on the above formula/formulae in Annexure-I as and when mentioned in Special conditions of contract; IO and WO being the indices applicable to the date on which the rates under Sub Clause 10 (a)A (i)&(ii) and Sub Clause 10 (a) B(iii) are fixed. No price variation shall be admissible for FAIR items created during execution.

Maximum Price Variation shall be as follows:

Time Period of Project	Maximum limit of Price Variation
Up to 12 months	No variation allowed
Above 12 months to 24 months	5%
Above 24 months	10%

Note:

- 1) **The extension in time period for the projects originally estimated including monsoon results in change of price variation slabs as mentioned above i.e. from first slab to second slab or from second slab to third slab, then the maximum limit of original slab will prevail.**
- 2) Operative period shall mean original or extended time period of contract.

For example:

Extension of Time period	Maximum Price Variation
If original period of 11 months including monsoon extends to 16. The operative period will be 11+5 months.	No variation allowed
If original period of 11 months excluding monsoon extends to 16. The operative period will be 11+5 months.	Maximum 5% variation allowed

Price Variation during Extended Period of Contract:

- (i) **Extension Due To Modification & Extension for delay due to BMC :**

The price variation for the period of extension granted shall be limited to the amount payable as per the Indices. In case the indices increases or decreases, above/below the indices applicable, to the last month of the original or extended period vide clause 8 (1) (a) (i) and (ii) of standard GCC

- (ii) **Extension Of Time For Delay Due To Contractor :**

- (a) The price variation for the period of extension granted shall be limited to the amount payable as per the Indices in case the indices increase, above the indices applicable, to the last month of the original completion period or the extended period vide above clause 8(l)(a)(i) and (ii) of standard GCC.
- (b) The price variation shall be limited to the amount payable as per the indices, in case the indices decrease or fall below the indices applicable, to the last month of original / Extended period of completion period vide above clause 8(l)(b) of standard GCC, then lower indices shall be adopted.
- (iii) Extension of Time For Delay due to reasons not attributable to BMC and Contractor (Reference Cl.8 (d) of Standard GCC):
The price variation for the period of extension granted shall be limited to the amount payable as per the Indices in case the indices increases or decreases, above/below the indices applicable, to the last month of the original period.

78 Payment:

Interim Payment:

- i) Interim bills shall be submitted by the Contractor from time to time (but at an interval of not less than one month) for the works executed. The Engineer shall arrange to have the bills verified by taking or causing to be taken, where necessary, the requisite measurement of work.
- ii) Payment on account for amount admissible shall be made on the Engineer certifying the sum to which the Contractor is considered entitled by way of interim payment for all the work executed, after deducting there from the amount already paid, the security deposit
/and such other amounts as may be deductible or recoverable in terms of the contract.
- iii) On request, the contractor will be paid up to 75 percent of the value of the work carried out as an adhoc payment in the first week of next month after deducting there from recoveries on account of advances, interest, income tax etc. The balance payment due will be paid thereafter.
- iv) No interim payment will be admitted until such time the Contractor have fully complied with the requirement of the Condition no.8 (g) and 8 (h) concerning submission and approval of Network Schedule for the works, as detailed in Condition 8 (h). A fixed sum shall be held in abeyance at the time of next interim payment for non-attainment of each milestone in the network and shall be released

only on attainment of the said milestone.

- v) An interim certificate given relating to work done or material delivered may be modified or corrected by a subsequent interim certificate or by the final certificate. No certificate of the Engineer supporting an interim payment shall of itself be conclusive evidence that any work or materials to which it relates is / are in accordance with the contract.

79 Banning/De-Registration of Agencies of Construction works in BMC

- ❖ **The regulations regarding Demotion/ Suspension Banning for specific period or Permanent / De-Registration shall be governed as per the respective condition in Contractor Registration Rules of BMC.**

80 JOINT VENTURE (Not applicable for this tender)

In case if Joint Venture is allowed for the Project, the guidelines for JV as follows shall be incorporated in the Tender Document:

- a) Joint Venture should be allowed only when the number of identifiable different works is more than one and/or the estimated cost of tender is more than Rs.100 Crores. JV shall also be allowed for complex technical work below Rs.100 Crores with the approval of concerned AMC
- b) Separate identity/name shall be given to the Joint Venture firm.
- c) Number of members in a JV firm shall not be more than three in normal circumstances, if the work involves only one discipline (say Civil or Electrical). If number of members in JV is required to be more than three, then approval of concerned AMC needs to be sought.
- d) A member of JV firm shall not be permitted to participate either in individual capacity or as a member of another JV firm in the same tender.
- e) The tender form shall be purchased and submitted in the name of the JV firm or any constituent member of the JV.
- f) Normally EMD shall be submitted only in the name of the JV and not in the name of a constituent member. However, EMD in the name of lead partner can be accepted subject to submission of specific request letter from lead partner stating the reasons for not submitting the EMD in the name of JV and giving written confirmation from the JV partners to the effect that the EMD submitted by the lead partner may be deemed as EMD submitted by JV firm.
- g) One of the members of the JV firm shall be the lead member of the JV firm who shall have a majority (at least 51%) share of interest in the JV firm. The other

- members shall have a share of not less than 20% each in case of JV firms with up to three members and not less than 10% each in case of JV firms with more than three members. In case of JV firm with foreign member(s), the lead member has to be an Indian firm with a minimum share of 51%.
- h) A copy of Letter of Intent or Memorandum of Understanding (MOU) executed by the JV members shall be submitted by the JV firm along with the tender. The complete details of the members of the JV firm, their share and responsibility in the JV firm etc. particularly with reference to financial technical and other obligation shall be furnished in the agreement.
- i) Once the tender is submitted, the agreement shall not be modified/alterd/terminated during the validity of the tender. In case the tenderer fails to observe/comply with this stipulation, the full Earnest Money Deposit (EMD) shall be forfeited. In case of successful tenderer, the validity of this agreement shall be extended till the currency of the contract expires.
- j) Approval for change of constitution of JV firm shall be at the sole discretion of the BMC. The constitution of the JV firm shall not be allowed to be modified after submission of the tender bid by the JV firm except when modification becomes inevitable due to succession laws etc. and in any case the minimum eligibility criteria should not get vitiated. In any case the Lead Member should continue to be the Lead Member of the JV firm. Failure to observe this requirement would render the offer invalid.
- k) Similarly, after the contract is awarded, the constitution of JV firm shall not be allowed to be altered during the currency of contract except when modification become inevitable due to succession laws etc. and in any case the minimum eligibility criteria should not get vitiated. Failure to observe this stipulation shall be deemed to be breach of contract with all consequential penal action as per contract condition.
- l) On award of contract to a JV firm, a single Performance Guarantee shall be required to be submitted by the JV firm as per tender conditions. All the Guarantees like Performance Guarantee, Bank Guarantee for Mobilization advance, machinery Advance etc. shall be accepted only in the name of the JV firm and no splitting of guarantees amongst the members of the JV firm shall be permitted.
- m) On issue of LOA, an agreement among the members of the JV firm (to whom the work has been awarded) has to be executed and got registered before the Registrar of the Companies under Companies Act or before the Registrar / Sub-Registrar under the

Registration Act, 1908. This agreement shall be submitted by the JV firm to the BMC before signing the contract agreement for the work. (This agreement format should invariably be part of the tender condition). In case the tenderer fails to observe/comply with this stipulation, the full Earnest Money Deposit (EMD) shall be forfeited and other penal actions due shall be taken against partners of the JV and the JV. This joint venture agreement shall have, inter alia, following clauses:-

- i. Joint and several liability - The members of the JV firm to which the contract is awarded, shall be jointly and severally liable to the Employer (BMC) for execution of the project in accordance with General and Special conditions of the contract. The JV members shall also be liable jointly and severally for the loss, damages caused to the BMC during the course of execution of the contract or due to no execution of the contract or part thereof.
- ii. Duration of the Joint Venture Agreement -It shall be valid during the entire period of the contract including the period of extension if any and the maintenance period after the work is completed.
- iii. Governing Laws - The Joint Venture Agreement shall in all respect be governed by and interpreted in accordance with Indian Laws.
- iv. Authorized Member -Joint Venture members shall authorize one of the members on behalf of the Joint Venture firm to deal with the tender, sign the agreement or enter into contract in respect of the said tender, to receive payment, to witness joint measurement of work done, to sign measurement books and similar such action in respect of the said tender/contract. All notices/correspondences with respect to the contract would be sent only to this authorized member of the JV firm.

No member of the Joint Venture firm shall have the right to assign or transfer the interest right or liability in the contract without the written consent of the other members and that of the employer in respect of the said tender/contract.

- n) Documents to be enclosed by the JV firm along with the tender:
 - i. In case one or more of the members of the JV firm is/are partnership firm(s), following documents shall be submitted:
 - a. Notary certified copy of the Partnership Deed,
 - b. Consent of all the partners to enter into the Joint Venture Agreement on a stamp paper of appropriate value (in original).

- c. Power of Attorney (duly registered as per prevailing law) in favor of one of the partners to sign the MOU and JV Agreement on behalf of the partners and create liability against the firm.
- ii. In case one or more members is/are Proprietary Firm or HUF, the following documents shall be enclosed:
 - a. Affidavit on Stamp Paper of appropriate value declaring that his Concern is a Proprietary Concern and he is sole proprietor of the Concern OR he is in position of "KARTA" of Hindu Undivided Family and he has the authority, power and consent given by other partners to act on behalf of HUF.
- iii. In case one or more members is/are limited companies, the following documents shall be submitted:
 - a. Notary certified copy of resolutions of the Directors of the Company, permitting the company to enter into a JV agreement, authorizing MD or one of the Directors or Managers of the Company to sign MOU, JV Agreement, such other documents required to be signed on behalf of the Company and enter into liability against the company and/or do any other act on behalf of the company.
 - b. Copy of Memorandum and articles of Association of the Company.
 - c. Power of Attorney (duly registered as per prevailing law) by the Company authorizing the person to do/act mentioned in the para (a) above.
- o) All the members of the JV shall certify that they have not been black listed or debarred by BMC from participation in tenders/contract in the past either in their individual capacity or the JV firm or partnership firm in which they were members / partners.
- p) Credentials & Qualifying criteria: Technical and financial eligibility of the JV firm shall be adjudged based on satisfactory fulfilment of the following criteria: (N.A.)

Technical eligibility criteria: In case of Work involving single discipline, the Lead member of the JV firm shall meet at least 35% requirement of technical capacity as stipulated in tender document.

OR

In case of composite works (e.g. works involving more than one distinct component such as Civil Engineering works, M&E works, Electrical works, etc. and in the case of major bridges, substructure and superstructure etc.), at least one member should have satisfactorily completed 35% of the value of any one

component of the project work so as to cover all the components of project work or any member having satisfactorily completed 35% of the value of work of each component during last seven financial years.

In such cases, what constitutes a component in a composite work shall be clearly defined as part of the tender condition without any ambiguity.

Financial eligibility criteria: The contractual payments received by the JV firm or the arithmetic sum of contractual payments received by all the members of JV firm in any one of the previous three financial years and shall be at least **100% of the estimated value** of the work as mentioned in the tender.

81 Compensation for delay:

If the Contractor fails to complete the works and clear the site on or before the Contract or extended date(s) / period(s) of completion, he shall, without prejudice to any other right or remedy of Municipal Corporation on account of such breach, pay as agreed compensation, amount calculated as stipulated below (or such smaller amount as may be fixed by the Engineer) on the contract value of the whole work or on the contract value of the time or group of items of work for which separate period of completion are given in the contract and of which completion is delayed for every week that the whole of the work of item or group of items of work concerned remains uncompleted, even though the contract as a whole be completed by the contract or the extended date of completion. For this purpose the term 'Contract Value' shall be the value of the work at Contract Rates as ordered including the value of all deviations ordered:

- Completion period for projects (originally stipulated or as extended) not exceeding 6 months: **to the extent of maximum 1 percent per week.**
- Completion period for projects (originally stipulated or as extended) exceeding 6 months and not exceeding 2 years: **to the extent of maximum ½ percent per week.**
- Completion period for projects (originally stipulated or as extended) exceeding 2 years: **to the extent of maximum ¼ percent per week.**

When the delay is not a full week or in multiple of a week but involves a fraction of a week the compensation payable for that fraction shall be proportional to the number of days involved. Provided that the total amount of compensation for delay to be paid this condition shall not exceed the undernoted percentage of the Contract Value of the item or group of items of work for which a separate period of completion is given.

- i) Completion period (as originally stipulated or as extended) not exceeding 6 months: **10 percent.**
- ii) Completion period (as originally stipulated or as extended) exceeding 6 months and not exceeding 2 years: **7½ percent.**
- iii) Completion period (as originally stipulated or as extended) exceeding 2 years: **5 percent.**

The amount of compensation may be adjusted against any sum payable to the contractor under this or any other contract with the Municipal Corporation.

82 **Action And Compensation Payable In Case Of Bad Work And Not Done As Per Specifications**

All works under or in course of execution or executed in pursuance of the contract, shall at all times be open and accessible to the inspection and supervision of the Engineer-in-charge, his authorized subordinates in charge of the work and all the superior officers, officer of the Vigilance Department of the BMC or any organization engaged by the BMC for Quality Assurance and the contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

If it shall appear to the Engineer-in-charge or his authorized subordinates in-charge of the work or to the officer of Vigilance Department, that any work has been executed with unsound, imperfect or unskillful workmanship or with materials of any inferior description, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract, the contractor shall, on demand in writing which shall be made within twelve months of the completion of the work from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of the failing to do so within a period specified by the Engineer-in Charge in his demand aforesaid, then the contractor shall be liable to pay compensation at the same rate as under clause

8.e. of the general condition of contract in section 9 of tender document (for Compensation for delay) for this default. In such case the Engineer-in Charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the Engineer in charge may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the work outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the contractor. Decision of the Engineer-in-Charge to be conveyed in writing in respect of the same will be final and binding on the contractor. If the penalization amount exceeds maximum limit with respect to Clause 8.e of Standard General Conditions of Contract, then a show cause notice shall necessarily be issued to the contract as to why the contract should not be terminated.

83 Contractors remain liable to pay compensation:

In any case in which any of the powers conferred upon the Engineer In-charge by the **relevant clauses** in documents that form a part of contract as exercised or is exercisable in the event of any future case of default by the Contractor, he is declared liable to pay compensation amounting to the whole of his security deposit. The liability of the Contractor for past and future compensation shall remain unaffected.

In the event of the Executive Engineer taking action against these relevant clauses, he may, if he so desires, take possession of all or any tools and plant, materials and stores in or upon the work of site thereof or belonging to the Contractor or procured by him and intended to be used for the execution of the work or any part thereof paying or allowing for the same in account at the contract rates, or in the case of contract rates not being applicable at current market rates to be certified by the Executive Engineer, may after giving notice in writing to the Contractor or his staff of the work or other authorized agent require him to remove such tools and plants, materials or stores from the premises within a time to be specified in such notice and in the event of the Contractor failing to comply with any such requisition, the Executive Engineer may remove them at the contractors expense of sell them by auction or private sell on account of the Contractor at his risk in all respects and certificate of the Executive Engineer as to the expense of any such removal and the amount of the proceeds an expense of any such sell be final and conclusive against the Contractor.

84 No Claim To Any Payment Or Compensation Or Alteration In Or Restriction Of Work

- (a) if at any time after the execution of contract documents, the Engineer shall for any reason whatsoever, desires that the whole or any part of the works specified in the Tender should be suspended for any period or that the whole or part of the work should not be carried out, at all, he shall give to the Contractor a Notice in writing of such desire and upon the receipt of such notice, the Contractor shall forthwith suspend or stop the work wholly or in part as required after having due regard to the appropriate stage at which the work should be stopped or suspended so as not to cause any damage or injury to the work already done or endanger the safety thereof, provided that the decision of the Engineer as to the stage at which the work or any part of it could be or could have been safely stopped or suspended shall be final and conclusive against the contractor.

The Contractor shall have no claim to any payment or compensation whatsoever by reason of or in pursuance of any notice as aforesaid, on account of any suspension, stoppage or curtailment except to the extent specified hereinafter.

- (b) Where the total suspension of Work Order as aforesaid continued for a continuous period exceeding 90 days the contractor shall be at liberty to withdraw from the contractual obligations under the contract so far as it pertains to the unexecuted part of the work by giving 10 days prior notice in writing to the Engineer within 30 days of the expiry of the said period of 90 days, of such intention and requiring the Engineering to record the final measurement of the work already done and to pay final bill. Upon giving such Notice, the Contractor shall be deemed to have been discharged from his obligations to complete the remaining unexecuted work under his contract. On receipt of such notice the Engineer shall proceed to complete the measurement and make such payment as may be finally due to the contractor within a period of 90 days from the receipt of such Notice in respect of the work already done by the contractor. Such payment shall not in any manner prejudice the right of the contractor to any further compensation under the remaining provisions of this clause.
- (c) Where the Engineer required the Contractor to suspend the work for a period in excess of 30 days at any time or 60 days in the aggregate, the Contractor shall be entitled to apply to the Engineer within 30 days of the resumption of the work after such suspension for payment of compensation to the extent of pecuniary loss suffered by him in respect of working machinery remained idle on the site on the account of

his having an to pay the salary of wages and labour engaged by him during the said period of suspension provided always that the contractor shall not be entitled to any claim in respect of any such working machinery, salary or wages for the first 30 days whether consecutive or in the aggregate or such suspension or in respect of any such suspension whatsoever occasion by unsatisfactory work or any other default on his part, the decision of the Engineer in this regard shall be final and conclusive against the contractor.

85 Contractor to supply plant, ladder, scaffolding, etc and is liable for damages arising from non-provision of lights, fencing, etc.

The Contractor shall supply at his own cost all material, plant, tools, appliances, implements, ladders, cordage, tackle scaffolding and temporary works requisite or proper for the proper execution of the work, whether, in the original altered or substituted form and whether included in the specification of other documents forming part of the contract or referred to in these conditions or not and which may be necessary for the purpose of satisfying or complying with the requirements of the Eng-In-Charge as to any matter as to which under these conditions is entitled to be satisfied, or which is entitled to require together with the carriage therefore to and from the work.

The Contractor shall also supply without charge, the requisite number of person with the means and materials necessary for the purpose of setting out works and counting, weighing and assisting in the measurements of examination at any time and from time to time of the work or materials, failing which the same may be provided by the Engineer In-charge at the expense of the contractor and the expenses may be deducted from any money due to the contractor under the contract or from his security deposit or the proceeds of sale thereof, or offers sufficient portion thereof.

The contractor shall provide all necessary fencing and lights required to protect the public from accident and shall also be bound to bear the expenses of defense of every suit, action or other legal proceedings, that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit action or proceedings to any such person or which may with the consent of the contractor be paid for compromising any claim by any such person.

86 Prevention of Fire :

The contractor shall not set fire to any standing jungle, trees, brushwood or grass without a written permit from the Engineer In-charge. When such permit is given, and also in all

cases when destroying cut or dug up trees brushwood, grass, etc., by fire, the contractor shall take necessary measure to prevent such fire spreading to or otherwise damaging surrounding property. The Contractor shall make his own arrangements for drinking water for the labour employed by him.

87 Compensation for all damages done intentionally or unintentionally by contractor's labour whether in or beyond the limits of BMC property including any damage caused by spreading the fire shall be estimated by the Engineer In-charge or such other officer as he may appoint and the estimate of the Engineer in-charge to the decision of the Dy. Chief Engineer on appeal shall be final and the contractor shall be bound to pay the amount of the assessed compensation on demand failing which the same will be recovered from the Contractor as damages or deducted by the Engineer In-charge from any sums that may be due or become due from BMC to contractor under this Contract or otherwise. Contractor shall bear the expenses of defending any action or other legal proceedings that may be brought to prevent the spread of fire and he shall pay any damages and costs that may be awarded by the Court in consequence.

88 In the case of Tender by partners, any change in the constitution of the firm shall be forthwith, notified by the contractor through the Engineer In-charge for his information.

89 **Action where no specifications:**

In the case of any class of work for which there is no such specifications, such works shall be carried out in accordance with the specifications and in the event of there being no such specifications, then in such case, the work shall be carried out in all respects in accordance with all instructions and requirements of the Engineer In-charge.

90 **Safety and medical help :**

- (i) The Contractor shall be responsible for and shall pay the expenses of providing medical help to any workmen who may suffer a bodily injury as a result of an accident. If such expenses are incurred by BMC, the same shall be recoverable from the contractor forthwith and be included without prejudice to any other remedy of BMC from any amount due or that may become due to the Contractor.
- (ii) The contractor shall provide necessary personal safety equipment and first-aid box for the use of persons employed on the site and shall maintain the same in condition suitable for immediate use at any time.
- (iii) The workers shall be required to use the safety equipment's so provided by the contractor and the contractor shall take adequate steps to ensure the proper use of equipment's by those concerned.

(iv) When the work is carried on in proximity to any place where there is risk or drawing all necessary equipment's shall be provided and kept ready for use and all necessary steps shall be taken for the prompt rescue of any person in danger.

91 No compensation shall be allowed for any delay caused in the starting of the work on account of acquisition of land or in the case of clearance of works, on account of ant delay in according to sanction of estimates.

92 **Anti-malaria and other health measures:**

Anti-Malaria and other health measures shall be taken as directed by the Executive Health Officer of BMC. Contractor shall see that mosquito genetic conditions are created so as to keep the vector population to a minimum level. Contractor shall carry out anti-malaria measures in the area as per the guidelines issued by the Executive Health Officer of BMC from time to time.

In case of default, in carrying out prescribed anti-malaria measures resulting in increase in malaria incidence, contractor shall be liable to pay BMC on anti- malaria measures to control the situation in addition to fine.

SECTION 10

TECHNICAL SPECIFICATION & SCHEDULE OF QUANTITIES

BRIHANMUMBAI MUNICIPAL CORPORATION

TECHNICAL SPECIFICATION

1. **Name of the work :-** Proposed works to be carried out at Annabhau Sathe Auditorium in campus of V.J.B.Udyan , Byculla in 'E'Ward on the land bearing CTS No.563(pt).Mazgoan Division in 'E' Ward .
2. **Area of Work :-** V.J.B.Udyan , Byculla (East) in 'E' Ward office jurisdiction.
3. **Completion /Contract Period:-** 04 Months .
4. **Scope of Work :-**
 - 4.1. The works contemplated under this construction comprise of Part – A – Civil works: Wooden work ,Pit work ,Structural steel Trusses, Entrance/ Exit Ramps, flooring, windows ,Doors, Structural Glazing etc. with interior facilities as per scope. Part – B: MEP, Stage lighting, Auditorium sound system AV system , Security works etc. as per scope indicated in tender.
 - 4.2. The entire work in this tender are divided into different parts depending on the different types of work involved. However, this broad classification is for mere guidance only. Actual work shall be as described in the Drawing, Specification and Bill of Quantities and as instructed at site from time to time. The scope of work Summarized as below:
 1. To increase stage depth by shifting front curtain by 1-2 Feet as per layout. Curtain to be shift in line of existing array speakers.
 2. Providing extra lighting bar with additional lights at stage for front side area of stage after shifting of front curtain with catwalk provision.
 3. Shifting of existing orchestra pit at center (6.5 ftx10 ft.) and keep the steps at both side along center pit by covering existing site pit to extend the stage area with shifting of all electrical services connections.
 4. Additional Acoustic provisions for catwalk area, closing of open entries etc. to avoid disturbance of internal and external sound noise.
 5. Replacement of revolving wings with sliding wing as per Dinanath Natyagraha.
 6. Providing 'C' type catwalk for par light above auditorium chair area for par light setting during show & maintenance by providing entry from front door exist passage area.
 7. Make up room partition removal & allied work for left side of auditorium. Glass table to be replace with wooden table.
 8. Inning room door to be change with sliding door for space use for right side of auditorium.
 9. Alteration to railing at first floor entry for ques No. S,T,U,V&W.
 10. Removal of wooden batten form wall of sound room & cry room to sea show.
 11. To increase FOH window size for light adjustment, also increase par lights/spot at stage area.

12. Back side area waiting room refurbishment with provision of toilet and AC system.
13. Provision of ladders for maintenance of terrace area with easy access.
14. To attend leakages from roof area.
15. To provide treatment for drumbeat sound of rain from roof sheets (Waterproofing, Acoustical treatment)
16. Providing glass protection for Annabhau Sathe's Mural.
17. Additional lighting side bar arrangement for effective area of stage with truss provision by covering with zhalar /curtain.
18. To increase FOH Window size for easy adjustment of lighting system.
19. To carryout necessary civil work for easy movement of vehicles at main entrance gate .
20. Additional CCTV display monitor provision for office area at ground and first floor.
21. Provision of Displays, advertising boards for drama's /functions at Entrance areas
22. Decorative façade lighting for Auditorium façade area towards road side.
23. Provision of additional Green Room in basement.
24. Provision of steel wire fencing on compound wall of auditorium areas.
25. Provision of canteen platform at first floor & provision of cafet area at ground floor backside garden area with tensile roof .
26. Providing Statue of Annabhau Sathe at entrance gate step area.
27. Provision of quick changing room near stage area for VIP's /Artist.
28. Protection grills for safety of staff from tree branches falls.
29. Bird entry protection grills provision at basement area.
30. Provision of flag hosting platform in Annabhau Sathe Auditorium.
31. Providing of statue of Lokshahir Annabhau Sathe as per art approved by client.
32. Providing wooden flooring ,Synthetic carpet ,structural steel ,gypsum board, painting work ,rewiring ,recalibration ,etc miscellaneous works to complete the work to run auditorium in all respect.
33. Removal & re-fixing of chairs of auditorium as required during work to avoid damage to chair.
34. Providing chair cover item (Tarpolin) during work execution.
35. Providing cup lock scaffolding for catwalk and allied works proposed in Auditorium.
36. The successful contractor shall get the material factory inspected / approved before execution of work. All inspection charges will be born by contractor.
37. The successful contractor shall take all necessary measures from a safety point of view during the execution of the work in the premises.
38. Any changes/alteration/modification/shifting of the electric network that may be required at the concerned site/area/space will be the responsibility of the successful contractor.
39. Restoration of existing all services such as stage lighting system, sound system, curtain

system etc. after addition alteration work is sole responsibility of contractor.

40. BMC reserves the right to change the location, modify the quantity between fixed stackable volume organizer and variable stackable volume organizer within the limit of the contract cost with the sanction of competent authority.
41. Trial and Testing of auditorium equipments, lights, sound system, curtain system, lighting bar etc.
42. Commissioning & programming, calibration of all equipment.
43. The hardware and control cables should be of the best quality and all the electrical works should comply with the Indian /state electricity rules.
44. All the material used shall conform with relevant IS Codes, if applicable.
45. The BOQ is for reference purpose only, any other item required, over & above the mentioned BOQ shall be included by the tenderer, without any extra cost to MCGM.

PART – A – CIVIL WORK:

- **Enabling Work** – Demolition/ Dismantling of existing structures removing the existing sundry items, floorings, doors windows, Plumbing items pipes, Electrical fittings cabling etc as directed.
- **PCC/ RCC Works** – RCC work for Foundation, Raft, walls, slabs, Lintels, beams, columns, staircase, folded slabs, weather shades etc & Reinforcement steel as per detail structural drawings as applicable.
- **Masonry Works** – Brick work, autoclaved aerated cement block work, Coursed rubble masonry as applicable
- **Plastering Works** – Internal external cement sand plaster, Birla putty, Pointing to stone masonry etc. as applicable
- **Waterproofing Works** - Water proofing treatment and cement based patented treatment for terrace Roof chajjas etc. membrane water proofing as applicable
- **Structural Steel Works** – Providing detailing fabricating Hot rolled section, Built-up sections, Hollow steel section of Tata Structural for catwalk, lighting bars ,curtain bars , Rafters, purlins etc. Entrance Gates, MS railing, SS railing, Colour Coated Galvalume/zincalume sheets for Roof cladding.
- **Flooring/ Tiling/ Dado work** – Providing/ laying/ fixing flooring Kota, Granite, Vitrified tile, ceramic tile, Terracotta Tile dado, Concrete pavers as applicable
- **Roof waterproofing work** :- Contractor shall carry out waterproofing to rectify the leakage issue and rectification of drumming effect with acoustic treatment in consultation with PMC.

To check drumming effect sound test shall be done with water spray to the satisfaction of acoustic consultant. Necessary adequate gutter out let , drains , double skin sheet for roof with insulation shall be provided on existing roof.

- **WOOD/ ALUMINIUM/ FALSECEILING/ CLADDING/ GLAZING WORKS** – Providing fixing Wooden frame , door shutter, glass doors, glass partition, structural glazing, windows, structural glazing, Aluminium composite panel cladding, gypsum false ceiling, metal false ceiling, Toilet cubicle system etc. as applicable
- **PAINTING WORKS** - Providing applying white wash, Obd, Plastic emulsion paint, exterior paint, fire retarding paint etc. per detail drawings & finishing schedule.
- **AUDITORIUM FURNISHING/ ACOUSTICAL WORKS** – Providing fixing Teak wood wooden reed putty, Thermal/ Acoustical insulation ceiling including 50 mm thk Micron of 1000 gsm density, wall, ceiling panels Microfiber Black Matt panels, Wood wool board ceiling/ wall panelling covered with fabric, wooden stage flooring, skirting, steps risers, observation windows, acoustical doors, catwalk, perforated aluminum sheet on walls and ceiling, Synthetic washable carpet of 1000 gsm Loop pile woolen / nylon carpet with 8 mm thk, as applicable
- **STAGE CRAFT** – Providing fixing installing fabrics for stage craft system fire retardant velvette2 fabric with lining gathering for main scallop, House curtain, Mid curtain, Rear curtains, frills, Cyclorama PVC screen perforated etc. as applicable while restoration

PART – B – MEP, SECURITY, LIFT WORKS ETC. :

- **ELECTRICAL WORK** – Providing & installing Panels, DBS, cables, lightings, power wiring, earthing etc. complete as per manufacturers specifications & drawings as required during renovation/rectification.
- **STAGE LIGHTING** – Supply Installation cool light, halogen Fresnel/ zoom profile spot light, flood light, stage lighting accessories, Infrastructure for stage lighting & stage craft system, suspenders, clamps, brackets, MS C-track grid, MS grating, cable tray, CEE/ IEC cable termination power marshaling box, motor control center panel, Remote control panel, motorized lighting bars, self-climbing motorized tele climber hoists, motorized main scallop bar, motorized curtain track system etc. as required during renovation/rectification. Contractor shall do necessary cabling, rewiring work ,networking connections without joint to cables by replacing existing power , communication , LV cable with new to avoid power issues in future.
- **AUDITORIUM SOUND SYSTEM** – Rectification/ re-termination/ calibration/shifting of sound system etc. complete as per manufacturers specifications & drawings as required during renovation/rectification. Contractor shall do necessary cabling, rewiring work ,networking connections without joint to cables by replacing existing power , communication , LV cable with new to avoid power issues in future.
- **SECURITY WORK** – Renovation / rectification of existing CCTV Analog, Public Address system for better performance. Contractor shall do necessary cabling, rewiring work

,networking connections without joint to cables by replacing existing power , communication , LV cable with new to avoid power issues in future.

- **Providing Decorative Lighting** :-Providing decorative lighting with RGBW fixtures as mentioned in BOQ . Contractor shall provide layout of fixtures and allied material with allied work cabling, electrification work , db's location. Contractor shall provide branded make fixtures and allied material as per client requirement. Configuration with software with creation of themes , pattern , proper aiming for surface lightening . festival & national themes shall be minimum 5 nos. themes shall be provided .
- **Providing lift** :- For Senior citizen / handicap persons as per Technical Specification(Separate volume)

5. Technical Specifications:

S P E C I F I C A T I O N S

1. Excavating foundations

(a) Trenches for foundations, footings/cesspits, drains etc. to be excavated to the exact width length and depth shown or figured on the drawings or as may be directed by the Engineer. If taken out to a greater width, length, or depth than shown or required the extra work occasioned thereby shall be done at the Contractor's expense. Extra depth shall be brought up by sound masonry or concrete filling and extra length or width filled in by rammed earth or muram or, if the Engineer thinks it necessary for the stability of the work, by masonry or concrete as may be directed. The excavated material shall be used to fill in on each side of the masonry or to form the filling in of floors or it shall be placed or spread elsewhere on or near the side of the works as may be ordered free of charge. The Contractor shall at his own expense and without extra charge, make provision for all shoring, pumping, dredging, bailing out or draining water, and the trenches shall be kept free of water while the masonry or concrete is in progress and till the Engineer considers that the mortar is sufficiently set. The sides of the trenches to be kept vertical and the bottom horizontal, and to be run at the same level throughout or properly stepped as may be desired by the Engineer. The Contractor shall also, at his own cost remove such portions of boulders or rock as are required to make the bottom of the trench horizontal and level. He shall also make level and hard the bed of all the trenches and consolidate the earth about the same and against all walls, pits, drains etc. The foundation trenches to be inspected and passed by the Engineer before any masonry work is commenced and the Contractor shall hold an order in writing to this effect, other wise he shall be liable to have his work removed for inspection.

All the excavated materials belong to the Municipal Corporation of Greater Mumbai and therefore shall be property of Municipal Corporation of Greater Mumbai. It will be mandatory on the part of contractor to use this material in the execution of works under contract if the quality of material available is as per the specification. The contractor shall

have to sort out the material in separate stacks and transport the same at his cost. No transportation charges or any other charges will be paid to the contractors. The rate of excavation is deemed to include the cost of transportation and disposal of surplus excavated materials to any location as directed by the Engineering Staff. However, if the contractor is directed to dump the material on the municipal dumping ground, the amount will be recovered from the contractor at the rate of Rs.500 per trip from 1.1.2006 being tipping charges for which the contractor has to quote the rate accordingly.

(b) The measurement of the work will be the exact length and width of the lowest step of the footing according to drawings or the Engineer's instructions and the depth measured vertically.

The contractor shall make every effort to carry out the excavation in rock to the correct formation levels as far as practicable. However, under cut and over cut up to 8 cm. of the formation levels shall be permitted. As far as payment is concerned quantities shall be worked out with respect to formation levels only. Under cut in excess on 8 cm. shall be removed by chiseling and over cuts for above 8 cm. shall be filled in with 1:3:6 concrete without any extra cost.

2. Filling in with Contractor's Earth or Murum.

(a) The earth or murum, whenever required to be supplied by the Contractors for filling in the low lying ground and wells or in the embankment of the road, shall be dry, friable, and free from mud sludge, vegetable matter or rotten material of any kind, or material likely to decay and of a quality to be approved by the Engineer. All big lumps or clod shall be broken before spreading the earth or murum on the ground.

(b) The filling in of wells and low-lying grounds shall be done in such layers as may be directed from time to time by the Engineer, and no fresh layer shall be allowed to be put on unless the previous one is properly spread, trimmed, leveled, and thoroughly consolidated by rammers or rollers, as the case may be, or as may be ordered by the Engineer.

(c) The embankment shall be raised in regular layers slightly concave in section, beginning from the bottom and gradually raised to the full height, layer by layer not exceeding 300 mm. in thickness in a loose state. Each layer shall be thoroughly consolidated by watering where necessary and rolling it with an approved steam or diesel roller before the next layer is put on. The rolling and consolidation should be done to the entire satisfaction of the Engineer and no rubble packing or metal should be laid on it until the Engineer is satisfied that the earthwork has been thoroughly consolidated and written certificate is given to them effect by the Engineer.

(d) The rates for embankment or filling in with Contractors earth or muram shall include the cost of materials, fencing, lighting, watching haulage, spreading, leveling, watering, rolling and consolidating.

3. Dry Rubble Packing

The dry rubble packing shall consist of a layer of uniform thickness of blue trap stone rubble, or any other approved stone carefully set as close as possible on ground properly formed for the purpose. The width of the upper part of the stone shall not be more than 200 mm. or less than 150 mm. and the packing shall consist of large stones. The interstices between the rubble stones shall be filled up with stone chips, removing the projection of the upper part of the packing with care, as not to loosen the whole, the whole should be thoroughly rammed, watered, settled to place and made compact.

4. Cement Concrete in Foundation and Bedding

(a) Cement concrete in foundation and bedding shall be mixed in the proportion of 1:3:6 or 1:4:8 as directed using Portland cement, sand and metal nos. 1, 2 and 3 in proportions as directed.

(b) The ground to be thoroughly leveled and well rammed before laying the concrete on the work. The concrete shall consist as described above. In case of hand mixing the metal, sand and cement, etc. as the case may be to be stacked, before mixing, in measured layers. The materials to be then thoroughly mixed in small quantities at a time with sufficient quantity of fresh water and laid in the work in layers, each not exceeding 300 mm. in depth and repeated one above the other. Salt or brackish water will not be allowed to be used. Each layer to be well rammed with heavy wooden or iron rammers. The work to be ground with thin mortar, while ramming, until it fills in all the spaces between stones and cream to the surface. The ramming operation to be continued until the whole work becomes solid and compact to the entire satisfaction of the Engineer. The measurement of the work will be the exact length, breadth and depth ordered by the Engineer or shown or figured on the drawing and after the concrete is consolidated.

(c) The stone metal to be made of good hard blue rubble stone from quarried to be approved of by the Engineer. The metal to be such as to pass through a ring 40 mm. diameter. Larger size metal or chips will not be accepted.

(d) The contractor shall adopt every precaution towards guarding the concrete from admixture with duster dirt of any kind and shall use properly constructed and impervious brick masonry or wooden platform for mixing and keeping it until laid in the work and protect it from rain and sun.

5. Un coursed Rubble Stone and Cement Masonry for Foundation etc.

(a) To be of the best description of blue basalt stones from quarries approved of by the Engineer and cement mortar in courses not exceeding 450 mm. in the height. The stones shall be large, flat-bedded and laid of flush in mortar. No stone to be less in breadth than 1½time sits height and less in length or tail into the work than twice its height. Every stone, whether large or small, must be set flush in mortar. The small stones used for wedging

or filling in to be carefully selected to fill in the voids between large stones. Care must be taken that no dry work or hollow space shall appear in the masonry work. The stones to be arranged so as to break joint least 75mm. and long vertical lines of joints to be carefully avoided everywhere. The joints at the face to be finished off by being neatly struck and smoothed with the trowel while the mortar is fresh. The upper surface of the work to be throughout to uniform level at the height of every course.

(b) When concrete is not used and the Engineer thinks it desirable, the lowest course of footing of about 300 mm. in depth to be formed of small chips properly laid in mortar and well rammed down so as to make a good solid level bed for the upper work.

(c) Rough rubble quoin-stones, flat-bedded and of suitable size, to be provided at all angles, and bond stones having an excess of tail only in the wall and not of height where required, to be also provided to insure uniform compactness of work. All stones to be laid on their quarry bed.

(d) Before commencing the masonry work the foundation trenches to be leveled right through and the bottom of the same watered and well rammed down. The trenches to be kept free of water while the masonry work is in progress, or if the Engineer thinks it necessary till the mortar used in the masonry, is sufficient set.

(e) The masonry to be well watered until it becomes hard and solid and to be well covered during the rains.

(f) Mortar to be made as described under the head.

(g) The measurement of the work to be exact length, breadth and depth ordered by the Engineer or shown or figured on the drawings.

(h) One header in at least every square yard or 0.84 Sq. Meter of facing shall bind into the work etc. as in specification No.6

6. Uncoursed Rubble, Stone and Cement Masonry for Plinths, Walls, Backing to cut-store works etc.

(a) To be of the best description of blue basalt rubble stones from an approved quarry and cement mortar in courses not exceeding 450 mm. in height. The stones to be flat-bedded and laid flush in mortar. No stone to be less in breadth than 1½ times its height and less in length or tail into the work than twice its height. Every stone, whether large or small, must be set flush in mortar, the small stones used for wedging of filling in being carefully selected to fill in the voids between larger stones. Care must be taken that no dry work or hollow space shall be left in the masonry. The stones to be arranged as to break joint at least 75 mm. and long vertical lines of joints to be carefully avoided everywhere. The joints at the face to be finished off by being neatly struck and smoothed with a trowel while the mortar is fresh. The upper surface of the work to be brought to uniform level at the height of every course.

(b) When the rubble masonry is built for backing to coursed rubble or khandkee face work,

the height of the course to be the same as that of the khandkee course.

(c) The stones at all courses and junctions of walls to be large size and dressed with the hammer. At all angles formed at the junction of walls that stones to run well into the masonry and laid headers and stretcher alternatively and at every third course the angle to be formed by cutting the stone into an angle.

(d) One header in at least every square yard or 0.80 square meter of facing shall bond into the work. The header to be about 500 sq.cm. in area at face and to run back to the entire width of wall. When the thickness of wall is more than 60 cm. a series of bond stones to be laid through the work so as to form a tie from front to back, breaking joint or over-lapping each other for at least 150 mm. No stone whose length is less than 45 cm. to be used in the work as header.

(e) All walls to be carried up simultaneously and to one level through out and no part shall be allowed to raise more than one meter above the rest to avoid unequal settlement. If it should be necessary to carry up one part of a wall before the other, it shall be done after previously obtaining the Engineer's permission and in case the end of the portion first build should be racked back i.e. left in steps each course projecting further than the one above it. Care should be taken to see that the sides of the wall are not built separately from the hearting, the faces and internal filling being done at the same time. The stones should cross from opposite sides of the wall and overlap as much as possible. No course to be laid unless the course below it is perfectly set.

(f) The Masonry to be well watered until it becomes hard and solid and to be well protected from sun and rain.

(g) The measurement of the work to be actual cubical contents of the masonry after deducting all the openings, cut stone work and all other items of work paid for separately.

(h) All bond stones to be marked inside and out and the marks to be retained until ordered by the City Engineer to be removed.

(i) Nothing extra will be allowed for inserting door and window frames or any frames of a similar character nor for the insertion of wooden blocks for fixing hooks rails etc.

7. Lime, Shingle, Sand and Mortar.

(a) The lime to be made of approved Salsette lime stone or kunkur and properly burnt and slaked with fresh water on the works. It must be free from excess of unburnt kunkurs, ashes cinders salt of other impurities and if the lime be considered to be of inferior quality or slaked with salt water it shall be rejected. All pieces of unburnt lime of other impurities to be screened or picked out and removed at once from the site.

(b) The different ingredients to be stacked before grinding in alternate layers. The materials of the lime mortar to be then carefully mixed dry in small quantities and thrown into a

mortar mill for grinding. The grinding to continue for at least three hours each time or for 150 revolutions of the mill. The mortar to be kept moist and well sheltered from the sun till it is used in the work. No mortar that has been kept for a fortnight after grinding to be used in the work without the special permission of the Engineer. The diameter of the mortar mill shall not exceed 9.10 meter. Where pure water for slaking the lime or mixing the lime and sand is not obtainable, water drawn from wells approved by the Engineer will be allowed to be used. Such water should be free from salt as much as possible, mud clay and other impurities.

(c) The shingle to be obtained from beds or banks of rivers shall be free from shells, salt and earth it shall be well washed. The sand to be clean, sharp and hard, free from large pebbles, salt, shells, earth, dust or other impurities. If the Engineer thinks it necessary he may cause the sand to be screened, windowed or washed with fresh water at the contractor's expense. Salt or blackish water will not be allowed to be used. Sea sand shall not be used in the work.

(d) The common lime mortar to be made of good, fresh lime and clean sand approved of by the Engineer and mixed in the proportion of one parts of lime (by measure) to one part of sand or as directed by Engineer.

(e) The hydraulic lime mortar shall be mixed in the proportion of four parts of lime (by measure) to one part of Aden pumice and four parts of sand.

(f) The cement mortar shall be mixed in the proportion of one part of Portland cement (by measure) and five or six parts of sand, as directed by the Engineer.

(g) The mud mortar shall consist of well-tempered clay mixed with a sufficient quantity of chopped lay or straw and cow dung.

8. Dressing of Stone

All faces of stone required to be dressed shall be true and out of winding, except where it is otherwise specified. The face of stone described as hammer-dressed shall be as far as possible square and leveled with a mason's hammer by knocking off all protuberances and ridges. Where it is described as dressed very rough the protuberances and ridges shall be further reduced with a chisel, leaving the face truly level though rough with depressions. These depressions shall not be more than 10 mm. in depth and in area 90 sq.m. Rough-dressed face shall differ from those dressed very rough in having the depressions not more than 5 mm. in depth and 48 sq. mm. in area. Where the face is required to be medium-dressed the depressions shall not be more than 3 mm. in depth and 13 sq. mm. in area. In fair dressing the face shall be dressed fine, but the chisel marks may be left visible in a few minute dimples scattered over it, in the fine dressing neither chisel mark nor any dimples whatsoever shall be left in the face.

9. Blue Basalt Stone

All blue basalt stone shall be from quarries to be approved by the Engineer and to be of the

best approved quality and color. All stones shall be sound, durable, uniform in color and texture and free from flaws, cracks, injurious veins, crystals, minerals, saltcavities and other defects. No earthly, discolored, weathered or water worn or boulders stones to be used.

10. Stone and Brick Masonry Work in general

(a) The work to be built plumb, curved, or batters, as may be required by the design and to be carried out in a thoroughly workman like manner and to the entire satisfaction of the Engineer. The Contractor to provide at his own expense all moulds, templates, centering, scaffolding etc. as may be required for the proper execution of the work which shall be included in the prices of the work, as no separate change to be made for them.

(b) All stones or bricks to be thoroughly cleaned and wetted with fresh water before being put into the work and the mortar to be used stiff

(c) The work to be kept wet while in progress to the entire satisfaction of the Engineer till the mortar is properly set. On Sundays and other holidays also when the work is stopped, the top of all unfinished masonry to be kept flooded and labourers to be employed for this purpose. Watering to be done carefully so as not to wash the mortar out of the joints. The Engineer shall be at liberty to employ labourers to water the work should the contractors fail to do the same to his (the Engineer's) satisfaction.

(d) Should the mortar perish that is becomes dry, white or powdery through neglect of watering , the work shall be pulled down and rebuilt at the contractor's expense.

(e) As a rule the whole of the masonry work in any structure to be carried up at one uniform level throughout but where breaks are unavoidable the joint to be made in good long steps, so as to prevent cracks arising between the new and old work. All junctions of walls to be formed at the time the walls are being built, and cross walls to be carefully bonded into the main walls.

(f) When new work is to be added to existing structure, the old work must be prepared to receive the new and both must be carefully bonded together.

(g) During the rains, the work to be carefully covered without extra charge, so as to avoid the fresh mortar being washed away.

(h) Where the word cement is used it is to be understood Portland cement of the best description, specified under the head of the Cement.

11. Bricks & Brick work in General.

(a) Bricks shall conform to the latest Indian standard specifications (I.S.S.). Bricks to be whole, sound, well burnt free from cracks to ring when struck and not to crack or break when soaked in water regular in shape and uniform in size. They should be of the best of description obtainable in the market and of the best quality and color, and in every respect to be approved by the Engineer unless otherwise specified they should be of English pattern 230 mm. x 115 mm. x 63.5 mm. No bricks to absorb water more than one fifth of their own

weight when dry for use in load bearing wall. For bricks used in panel walls, the water absorption shall not exceed $\frac{1}{4}$ of their dry weight. Bricks to be thoroughly cleaned, well wetted or soaked in fresh water before being used on the work and no broken bricks to be used except as closures. Crushing strength of the dry bricks shall be not less than 35 kg./cm.²

(b) The mortar should be as described under the head of good quality carefully mixed and used stiff. For joints of face work only Neroo and screened sand should be used in equal proportion.

(c) A good bond should be preserved throughout the work both laterally and transversely. All bed joints should be perpendicular to the pressure upon them, i.e. horizontal in vertical walls, radial in arches and at right angles to the slope in battering walls.

(d) In walling the courses shall be kept perfectly horizontal and rise in plumb. The vertical joints shall break joints with the courses immediately below and above, but they shall be directly over one another in alternate courses to prevent the necessity of bats. The joints shall not exceed 10 mm. thick shall be fully of mortar close, well flushed up and neatly struck or pointed as may be required.

(e) English bond to be used throughout in walling. In arching such bond shall be used as the Engineer or his agent may direct.

(f) Facing of brick work to be specially selected brick of the same color throughout. All external brick walls of thickness 25 mm. and above, shall be constructed in plumb from the outside face with the help of scaffolding erected on the external side.

(g) In other respects, the work should comply with the general specification for brick work given in P.W.D. Hand book.

12. Pointing.

a) The old mortar to be raked out of the joints at least 20 mm deep. The dust to be brushed out of the joints and the walls well wetted with fresh water until the old mortar in the wall is wet. The pointing to be made with mortar of cement and fine sand, in proportions as specified. The joints to be neatly defined by the pointing and the same to be sunk as per drawings. No false joints will be allowed. The pointing to be kept wet until the cementing material sets and becomes hard. The whole surface to be left clean at the completion of the work.

b) After the joints are raked out they shall be inspected by the Engineer before being filled up.

13. Polished Tander Stone Pavement.

The flag stones shall be of specified thickness, best approved quality uniform color for the whole work and smooth machine polished having absolute even surface. Stones with uneven surface shall not be used. They shall be fixed on a lime mortar cushioning 1:2 (c:s) 40 mm. average thickness and finally set in cement float and left clean after polishing. The flag

stones shall be laid in slope or level as directed. Border of bands shall be provided of best polished Kadappa stones as per detailed drawing or as directed. The rate for the work shall be inclusive of supplying, polishing and handling over neat and clean. The measurement of the work shall be the actual superficial area of the pavement.

14. Shahabad Stone Pavement.

The flag stones shall be of specified thickness of best approved quality. They shall be uniformly smooth. They shall be set in lime mortar cushioning 1:2 or cement mortar cushioning 1:3, 40 mm. average thickness and finally set in cement float and left clean after pointing. They shall be laid in slope as directed. The rate for the work shall be inclusive of supplying, setting and handing over neat and clean. The measurement of the work to be the actual superficial area of the pavement.

15. Neeru

Neeru to be made of the best description of lime slaked with fresh water and sifted. The lime to be reduced to a fine powder by grinding it on a stone or in a hand mill, with a thick solution of mussalla to be made as may be desired by the Engineer. The neru thus prepared to be kept moist until used and no more than that can be consumed in eight days to be prepared at a time.

16. Cement Plaster.

All stone and brick masonry shall be thoroughly wetted and raked out to a depth of at least 20 mm each and walls washed and wetted before plastering is done. Render with a mortar of specified parts of Portland cement and fine sand of specified thickness and rough but do not beat. Float or set with a thin coat 3 mm of Portland Cement and polished well immediately with a trowel or flat board. The cement mortar to be used within 30 minutes after it leaves the mixing board or mill. Before work is started patches of plaster 150 x 150 mm. should be put on about 3 meters apart as gauges. By this means an even thickness is ensured. Cement plaster must be in even squares or stripe. Care shall be taken to keep the whole surface thoroughly wetted for at least a week. The finishing surface should be as specified and directed. Nothing extra will be paid if the surface is required to be finished with neru and three coats of white or color wash.

17. Sand faced Cement Plaster.

All stone and brick masonry surface to be plastered shall be thoroughly wetted for at least 6 hours in case of brick masonry and the joints shall be raked out to a depth of at least 20 mm. before plastering. The first coat of cement mortar in the proportion as specified in item shall be applied uniformly all over the surface to be plastered to a thickness of 14 mm. with a trowel and flat board in exact plumb. This coat shall be allowed to rest for not less than half an hour. Indentations shall then be made in the form of waves by a wire broom over the surface to form a key for the second coat. The plastered surface shall be allowed to cure for

at least four days. First coat will be with addition of water proofing compound in proportion as specified in item. The second coat of cement mortar shall be applied in the proportion of as specified in item using clean and screened through a mesh of not less than 1.5 mm. and not more than or 3 mm. equal size to a uniform thickness of 6.5 mm by trowel and flat board in exact plumb. The surface shall be trapped with a cork piece to give a desirable uniform granular appearance. Care shall be taken to keep the whole surface thoroughly wetted for at least a week.

18. Metal works.

- a) All cast iron works to be clean, sharp sound and free from cracks, flaws, sand or air holes, or defects of any kind, with a fair and even surface. Then exist not less than 50 per cent of Nc.1 pig.iron, and to be sufficiently soft to admit of being easily cut by either chisel or drill.
- b) Moulds and patterns to be supplied by the Contractor unless otherwise specified, but in any case the responsibility for the accuracy of the castings, in size and dimensions shall rest with the Contractors.
- c) Holes for bolts, etc. shall be drilled out or cast in the castings as may be directed in each case.
- d) All wrought iron work to be carefully, cleanly and soundly forged, not ever heated or burnt. To be of best approved bar and plate iron. Rivets to be of approved iron. The rods for trusses or arches to be of the best approved iron.
- e) The work to be made accurately to the dimensions shown in the drawings all welds to be carefully examined and any not perfectly sound, rejected.
- f) No iron shall be used in girders or similar work that will not bear an ultimate tensile stress of 22 tons per square inch or 34.76 kg. per sq.mm. All bolts, tie rods, tension bars, straps etc. shall be tested with a proof tensile stress of 10 tons per square inch or 15.8 kg. per sq.mm. or as per the latest Indian Standard Specifications. Any article which shows sign of failure under this test shall be rejected, and such material shall not be procured and again submitted for test except by special permission of the Engineer in writing.
- g) Holes for bolts and rivets shall always be drilled when made by the hand and shall only be punched where proper machinery is available. All rivets shall be firmly clinched whilst hot, and left with a neat clean head free of cracks.
- h) Straps and collars shall be shrunk on so as to make them fit, firm and tight.
- i) All heads bolts passing through plates to be accurately fitted to the holes with heads lying squarely and closely on the plates. The heads to be forged in one piece with the bolts. Rivets must be tightened and drawn closely home and the head spread equally and properly hammered and set down all round.
- j) All screws to be out with a clean full thread without taper and to an accurate fit.

- k) Nuts when measured from side to side to be at least twice the diameter of the bolts and to be greater in depth than the diameter of the bolt.
- l) All iron works during the whole course of manufacture shall be subject to the inspection of the Engineer or those nominated for the purpose.
- m) All iron works to be seated while hot with boiled linseed oil or painted with two coats of red lead as the Engineer may direct.
- n) No iron works shall be painted before it has been examined by the Engineer or Inspecting Officer.
- o) The Engineer may order the completion and fitting together on the ground of such portions of works as he may expedient and may cause the same to be subjected to proper tests before it is put into position.
- p) In putting iron works together the greatest care should be taken to fit the plates and bars accurately in contact and to see that rivet and bolt holes correspond before being riveted. All joints to be perfectly cleaned and free from rust. If any parts are bent or injured, they are to be repaired according to the instructions of the Engineer. No holes to be rinsed out without the special permission of the Engineer, and then the rinsing out is to be done with a semi-circular bit not drifted and larger rivets or bolts must be used to fit the holes.
- q) In erecting girders, the different parts are to be fitted together with service bolts, and packed up to camber before riveting is commenced, care to be taken to keep the girder literally straight.
- r) In fixing bed plates, special care must be taken to put the holding down bolts exactly in position, so that the nuts may bear square and firmly grip the plate below. The upper surface of bed plates of rollers must coincide exactly with the level given by the Engineer. The bed plates to be set in mastic or cement as the Engineer may direct, the cost of which must be included in the rate for fixing.
- s) After the passing of any iron work by the Inspecting Officer the whole shall be thoroughly cleaned and scrapped clear of rust, and then covered with one coat of red lead and two coats of best oil paint, the color of which will be determined by the Engineer. All planed and turned surfaces to be covered with white lead and tallow.

19. Rolled iron steel beams, joists etc.

- a) The rolled iron steel beams and joists etc. shall be of the sections and sizes shown on the drawing or as may be ordered by the Engineer. They shall be of the best quality and without any defects. They shall be tested to bear such weights as the Engineer may determine.
- b) The rate for the rolled iron steel beam shall include the cost of beams the sieves, that of approved welding if required, that of drilling holes for bolts and nuts, required for fixing the plate below and above together with the cost of testing the beam after or before being riveted as the Engineer may direct and placing them in their position and painting them 3 coats in

oil paint in any approved tint, first coat being red lead. The measurement of the work to be theoretical weight of the beam or joints inclusive of bolts, nuts plates, welding etc. either in metric tonnes or kg.

20. Teak wood work.

a) The whole of the timber used to be of best C.P. teak, first quality of the dimensions and forms shown in the drawings or as desired by the Engineer. The wood to be in every case, of the best description, full-grown, sound free from large and loose or dead knots twists, shakers, sun cracks, flaws or others defects and to be of hard wood and well seasoned. The tolerance permissible in teak wood shall be as follows:

i) Sap wood to the extent of 25%.

ii) Wrap to the extent of 10 mm in 3 meter length.

iii) Live knots of 2 knots per meter the diameter of each knot not exceeding 20 mm.

b) All mortise and miter joints tenons, scarfs, etc. to be made and fitted accurately in a workman like manner in accordance with working drawing or directions and to the satisfaction of the Engineer.

c) If after the wood work shall have been erected any undue shrinkage of bad workmanship show themselves, the contractor shall forthwith amend the same without any extra charge.

d) The rate for wood work to include all sawing, planing, joining, framing labour and material for raising and fixing and all workmanship also the fitting, fixing and supply of all straps, bolts, mass, tranquil, spike, screws, necessary for the framing and fixing.

e) All timber resting on or embedded in masonry to be well tarred with boiling coal tar.

f) The measurement of all wood work to be for actual visible portion and no allowance will be made for tenons overlaps etc. excepting girder joist and wall plates of which the actual cubic contents will be taken.

g) The whole of the wood work shall be first treated with two coats of anti-termite wood preservative chemicals of an approved make. All the wood shall thereafter be applied with primary coat of paint. The application of primary shall not be done within 24 hours of the application of the second coat of anti-termite treatment. The wood work shall be made perfectly clean and smooth before painting. All wood work shall then be treated with 3 coats of oil paint or two coats of synthetic enamel paint of approved make in any shade/shades.

h) After each coat of paint, permission of the Engineer or his representative should be taken before proceeding with the next.

i) Cost of painting to be included in the cost of wood work to which it is applied.

21. Coal Tarring

For coal tarring to wood or iron work, the coal tar is to be heated nearly to boiling point thinned by the addition of half a pint of common country spirit to each gallon of tar, and while still very hot applied like paint with a brush and covered with fine coal powder, the

surface being first well cleaned. When possible to remove iron work for the purpose, it will be heated to little short of a red heat and then brushed over with coal tar, iron work which can not be heated will be painted with hot tar and spirit as specified for wood. The quantity to be used not be less than 22.50 kg. per sq.m.

22. Door and Window Frames.

- a) To be solid, of best country Teak, and of such scant lings as may be shown on the drawings, specified in the specification or as may be ordered by the Engineer.
- b) To be properly framed and morticed together and set solidly in the masonry. The parts hidden by masonry to be well tarred with boiling coal tar.
- c) To be rebated on one side 12mm wide, if there is to be a single door and of the full thickness of the shutter and to have a return head moulded on the other side of chamfered as may be directed or rebated on both sides, if there is a double door.

23. Doors Panelled (1st class)

- a) To be of the best Country Teak of approved quality.
- b) Frames of doors to be properly framed and mortised together, the head being provided with horns 150 mm long and uprights to have additional supports if required. All parts set in masonry to be well coated with boiling coal tar.
- c) The moulding of frames to be rebated on one side 12 mm wide and of full thickness of the shutter and to have a return head on the other or to be chamfered as may be directed.
- d) The styles top, bottom and look rail to be moulded on both, sides with ovals and filler moulding or as may be otherwise specified.
- e) The panels to be raised feather tongued into styles and rail with beeded edges on both sides or as directed. The corners of the raised panels to be rounded off or finished as shown in drawings. Each leaf to be hung with 3 iron oxidized butt or parliamentary hinges with iron screws and furnished with aluminium bolts and handles and iron hooks with iron eyes in frames. Each leaf to have two brass flush or barrel bolts of such length as specified or as directed by the Engineer. Either wooden stopper or iron hooks and eyes should be provided to keep the shutters open as directed. Each door shall be provided with one aldrop on the outside and one latch on the inside.
- f) The fixtures and fastenings to be of approved aluminum anodized best quality and to be fixed in a manner as specified as per I.S.S.
- g) All doors to be painted 3 coats of oil paints or synthetic enamel paint of approved make and tints as may be directed or varnished with best co pal varnish 3 coats.

24. Doors and Windows, Glazed 1st class.

To be as per specification no.28, with the exception of the paneled portion, which should be glazed? Fixtures and fastenings are to be of aluminium anodized of approved quality and dimensions as per I.S. Specifications.

25. Louver Windows

The louvers of the windows shall consist of 6.35 mm thick frosted sheet glass or 5 mm thick acrylic sheet 125 to 150 mm in width. The louver shall be filled every 75 mm in the opening of the windows.

26. Doors, partly Paneled and Partly Glazed or partly Panelled and partly Venetianed 1st class.

To be similar in all respects to Specification no. 25 except the following:-

- a) In the case of glazed doors such part to be glazed as may be directed by the Engineer or shown on the drawings, with sheet glass 3 mm thick and in like manner in the venetian ed doors such parts to be filled in with Venetians as may be directed.
- b) Styles and rails in glazed portion to be rebated 12 mm wide on one side received glass.
- c) Sash bars to be moulded and maitred on one side and rebated 12 mm on the other side to receive glass.
- d) Glazing to be of the best sheet glass. Each pane should be cut to fit the rebate truly and secured with iron and putty in the usual manners.
- e) The glazier's work to be done as specified under the head.

27. Specification for shutters (flush doors)

- 1) The timber to be of hard wood, well seasoned and kiln, dried.
- 2) The core to be built of timber strips of about 25 mm width closely packed and surfaced to flat uniform and smooth condition. All belt joint to be staggered.
- 3) The cross bands to be laid at right angles to the core extending the full width of the door shutter. The thickness of cross bands to be about 3 mm.
- 4) The face veneers to be laid with grain at right angles to the grain of the cross bands, the thickness of veneers to be about 1 mm.
- 5) The commercial plywood shall conform to I.S. 303-1960.
- 6) The entire binding to be done with synthetic resin of the hot press type to conform to boiling waterproof type as per I.S. 848-1957.
- 7) The shutters to conform to I.S. 2202-1962 in general.

28. Flush doors (Block board core)

Flush doors shall conform to I.S.I. specifications.

Width	Thickness
80 cm.	25 mm.
90 cm.	30 & 35 mm.
100 cm.	35 & 40 mm.

Width of the frame including lapping where provided should be minimum 50 mm and not more than 100 mm. The width of each strip of wood shall not exceed 25 mm. i.e. the width of

each Block Board core. The thickness of the face veneer as such or in the plywood shall be between 0.5 mm and 1.5 mm for commercial veneers and between 0.5 mm and 1.00 mm for decorative veneers. Lapping shall be provided internally and shall have a total depth of not less than 25 mm. The width of the lapping shall be equal to the thickness of the core.

The adhesive should be phenol formaldehyde. The specific letter from the manufacturers should be produced along with the voucher of the flush door. The beading of equal thickness of flush door and 12 mm thick to be provided around the flush door shutter to protect the come out veneer surface over and above the lapping provided as suggested above.

Ply flush door: - The flush door having central core and on either side two plies veneer pressed with hot press as per the 1st specification using formaldehyde adhesive.

29. Doors and windows Ventilated, 1st class Hold fasts for Doors and windows.

The hold facts both for doors and windows shall be size 230 mm x 29 mm x 3 mm. The length 230 mm will be exclusive of the two right angles bands at either ends each of which will be 40mm long to get a firm hold in the masonry.

In case because of vicinity of column of lesser thickness of wall holding the frame, it is not possible to use 230 mm. hold fasts, the length may be suitably reduced as directed but in no case it should be smaller than 100 mm.(Straight length).

The size and number of hold fasts shall be as shown on the detailed drawing or as directed.

- a) Shutter frames to be as per Specification no. 25 and filled in with venetians.
- b) The vanetian blinds to be 88 mm. wide 12 mm thick, or of such dimensions as the Engineer may direct and to overlap about half their width. To be secured to the moulded stanchion by aluminium or iron oxidized hinges 25 mm wide and to have flat, rounded edges on the inside and moulded edges on the outside.
- c) The frame of each shutter to be rebated all round outside on side and bottom rail, and inside on top rail. Ends of blades to have founded pins in center 10 mm diameter and 10 mm long and round holes to be made in the sides of the rebated portion of the frames to receive them.
- d) Fixtures and fastenings to be of aluminium or iron oxidized, as per specification no. 25 as per I.S.I . specification.

30. Specification for Alluminium works

The doors ,windows, partitions etc. shall be made out of extracted aluminium sections only and of Jindal or Windal make, weight of the sections shall be as per detailed Architectural drg.

All sections shall be anodized in any color and thickness of anodizing shall be between 18 to 20 microns in Matt or smooth finish an directed as per I.S.

The rate includes the cost for fabrication, erection on site, anodizing, glass, beading, neoprene or rubber baskets, fixtures, fastening, scaffolding etc. everything ready to use, The

mode of measurements shall be same as steel casement windows, doors, ventilators etc Aluminium doors and windows etc. shall be used of approved fabricators only and fixing shall be carried out through the agency of fabricators as per their specifications Aluminium doors and windows shall be completely water air tight. The aluminium doors and windows shall be confirm to I.S. specifications I.S. 1948 of 1961 and amended upto date in general.

As the sizes and weights of the aluminium extruded sections varies from manufactures to manufacturers + 5% tolerance is allowed in weight and sized for which no rebate or extra payment will be made.

31. Specifications for Aluminum Casement Windows and Ventilators

The window shall be made out of extruded aluminium hollow sections.

The corner joints shall be mechanical and the joining cleats shall be made out of aluminum extrusions with minimum 3 mm. except for the doors, where the angle cleats should be strong enough to take the load.

The open able windows shall be made of double weather stripped. One weather strip shall be provided in the outer frame and the other in the shutter frame. The weather strip shall be good quality natural rubber and of the size to make the window completely weather tight. The peg stays shall be made out of aluminum extruded sections only.

The hinges of openable shutter shall be strong and made out of aluminium extruded sections and pin of hinges shall be non. Corrosive material preferably stainless steel. Alternatively the open able shutters shall be provided with 4 bar arm S.S. hinges.

The window shall be provided with handle for a single point locking. The handle shall be made out of 6 thick aluminum alloy flat.

The aluminium sections shall be suitable for glazing 4 mm. to 5mm. thick flat glasses. Outer frame of openable window shall be 33.33mm X 3.33mm. X 4.26 mm section weighing 0.758 Kg/R mt.

Shutter frame shall be 33.33mm X 47.62 mm X 3.18mm section weighing 0.826 Kg/R mt.

Outer frame for fixing glazing shall be 33.6 mm X 26.0 mm X3.18 section weighing0.526 Kg/R mt.

Beading shall be 15.08 mm. X 12.70 mm X 1.6 mm. section weighing 0.16 Kg/R mt.

Intermediate mullion shall be 33.33mm X 58.8mm. X 3.1 mm. weighing 1.01 Kg/Rmt.

Intermediate coupling TEE shall be 44.45 mm. X 19.05 mm. X 4.76mm. weighing 0.928 Kg/Rmt.

32. Specifications for Sliding Window

Note:- The windows shall be made out of extruded aluminium sections.

The 4 track outer frame, top sill, bottom sill and verticals shall be 84.00 mm. X 25.09 mm X 1.50 section weighing 1.109 Kg/Rmt.

The 2 track outer frame, top sill, bottom sill shall be 42.00 mm. X 26 mm X 1.50 section weighing 0.58 Kg/Rmt.

The 2 track outer frame verticals shall be 42.00 mm. X 21.50 mm. X 1.50mm. section weighing 0.526 Kg /Rmt.

Shutter frame and bottom horizontals shall be 46.00mm X 16.00 mm. X 1.40 mm section weighing 0.489 Kg/Rmt.

Shutter, frame interlocking sections shall be 30.00 xx. X 21.00mm. X 1.20 mm. section weighing 0.414 Kg/Rmt.

Shutter, frame and verticals shall be 2.36.50mm X 18.00 mm. X 1.40 mm section weighing 0.431 Kg/Rmt.

Shutter shall be provided with two ball bearing rollers and 2 antirattling pieces/guides one each at top and bottom and weather strip all around.

All joints shall be mechanically jointed.

Window shutters shall be provided with special locking arrangement.

4 mm. X 5.5mm thick glass shall be fixed in the shutter by means of rubber gasket.

The additional outer frame for fly mesh shutter shall be 188 mmX 16.8 mm X 1.5 mm weighing 0.16 Kg/Rmt.

Architect sections, if required shall be 30mm X 7.5 mm X 1.2mm weighing 0.163 Kg/Rmt.

The aluminium sections shall be anodized in natural matt. finish. Thickness of anodic film shall be is microns (+ 3 microns)

33. Specifications for Aluminium Doors

The outer frame shall be made out of 101.60 mmX 44.45 mm. X 8.28 mm rectangular tabular section weighing 2.507 Rs./Rmt.

Shutters shall be made out specially extruded tabular sections where provision for weather stripping shall be made in the vertical jambs. The size of bottom member shall be 44.45mm.X99.24 mm.X3.18 mm and shall weight 2.579 Rs./Rmt. and the other members shall be of size 44.45 mm X 48.44mm. X 3.18mm and shall weight 1.49 Rs./Rmt.

The cleats for mechanical horizontal/vertical joints of the fixed frame and shutters shall be of specially extruded aluminium sections so as to avoid any play between jointed members.

Single action doors shall be fixed by heavy duty aluminium hinges .

A) Single action doors shall be provided with overhead duty door closer of approved make .

B) Double action doors shall be provided with door springs of approved make.

The active leaf shall have unity lock and shall also.

shutter shall be provided with PVC/Neoperence weather stripping.

The glazing beads, both on shutter as well as fixed glazing shall be of screw less type.

Neoperence /PVC gasket shall be used in the glazing beads for shutter.

For fixed glazing the glass shall be encased in PVC channel so as to avoid metal to glass

contact.

34. Rolling Shutter:

(1) Self coiling type: This type of rolling shutter can be used up to a maximum of about 8m² clear area without ball bearing and up to a clear area of about 12 m² with ball bearings (minimum 4 nos.)

(2) Gear operated type : This type of rolling shutter can be used up to a maximum of 25 m² clear opening area if the rolling shutter is operated by a level gear box crank handle and up to a maximum of 35 m² clear area if the rolling shutter is operated by chain wheel and hand chain amounted directly or work shaft.

(3) Electrically operated type : It shall be up to a maximum of about 50 m² clear opening area.

	Description of parts
(1) Curtain	(1) 20 G or 0.9 mm thickness up to 3.5 M width 18 G or 1.25 mm thickness above 3.5m width.
	(2) C/o distance of each curtain 75 mm.
(2) Lock plate	Thickness, 3.15 mm or 10 G
(3) Handle	One handle up to 2.5 m
(4) Guide channel	(1) Thickness 3.15 mm or 10 G
	(2) Depth of guide channel should be 60 mm. for clear width of rolling shutter 3.5 & 75 mm. above 3.5 mm
(5) Bracket Plate	Thickness 3.15 mm or 10 G.
(6) Hood cover	0.9 mm thick or 20 G

35. Steel casement doors and windows.

Windows and doors to be constructed of best rolled steel sections thoroughly cleaned of rust, scale and dirt. Windows and doors should be generally in accordance with latest ISS and prepared for outside putty glazing Box and tubemillions shall be provided when required and as directed. Side hung casement should be hung on extended friction hinges, french casement on ordinary friction hings and fitted with sheradised malleable iron handles. Horizontally pivoted ventilators should be hung on bronze cup pivots and fitted with a bronze spring catch for hand, cord or pole operations. Double doors opening out should be hung on extended steel hinges, fitted with bronze concealed bolts and head and sill of first closing loaf on with mortice block and bronze level furniture on second closing leaf. Single doors opening out should be hung on steel hinge and fitted with mortice and bronze lever fixture. Pressed steel door frame should be constructed of 16 gauge C.R.C.A. sind coated steel sheets in profile 'A' and supplied knocked down construction for easy erection at site, complete with adjustable lock strike, 3 loose pin 100 mm. but things welded to each frame, corrugated lugs for fixing rubber buffers and tie bars at sill. Putty used shall be special quick setting metal

windows putty (Not gold size putty). Glazing shall be with best 3.00 mm thick 6.5 to 7.5 kg. per square meter plan sheet glass. Fixing of all steel casement doors and windows shall be carried out through the agency of the manufacturer or his representative and as per their specifications. The measurement shall be on superficial area of the door or window supplied from outside of frame to outside of frame.

36. Painting Works

- a) When painting on wood, the work shall first be cleared of all such projections as glue or whitening spots being carefully removed with the stopping knife and duster, after which all knots shall be filled with one or more layers of oil and white zinc and size of glue laid on warm and rubbed down when dry with sand paper or pumice stone.
- b) The surface shall be thoroughly dried before the priming coat is applied.
- c) The work shall then be primed with a coat of four parts by weight of white zinc mixed with one part twice boiled linseed oil.
- d) In wood works all holes, cracks and nail heads shall then be stopped with putty, and irregularities reduced with sand paper and pumice stone.
- e) Iron work shall be first thoroughly cleaned from rust and dirt, after which red lead alone shall be used as a primer.
- f) For other materials when the work is to be finished in a dark color the priming may be zinc color, if to be finished orange, red and similar tints the priming may be pink.
- g) All color to be laid on evenly and properly with English made or best approved brushes.
- h) Each coat of color to be allowed to dry thoroughly before the next is laid on and all, except the last coat to be slightly rubbed down with pumice stone.
- i) No hair marks from the brush shall be left on the work or puddle in the corners of panels, angle of moulding etc.
- j) White paint to be made of the best mineral white zinc paint and double boiled linseed oil properly ground and mixed together with a small quantity of turpentine. A small quantity of Victoria blue to be added if directed.
- k) Linseed oil used shall be of best approved quality limpid, pale and brilliant, yellow and sweet to the taste with every little small, and shall be boiled twice.
- l) Putty shall be made of best whitening and oil, the whitening to be specially dry and passed through a sieve of 43 meshes to the inch, and then mixed with as much raw linseed oil as will form it into a stiff paste, this after being well needed, shall be left for twelve hours and worked up in small pieces till quite smooth. If the putty become dry it should be restored by heating and working it up again while hot.
- m) When tinted color are required, a small quantity of the proper tint should be first prepared to serve as a guide by which to mix the whole quantity. The ground white zinc shall first be well mixed with a portion of the oil, and then the tinting color shall be added to match

the pattern thoroughly after which the remaining portion of the oil or turpentine is to be added, and the whole passed through fine canvas or a fine sieve. The consistency shall be that of cream so as to work easily.

- n) Varnish to be co-pal with varnish or such other as may be specified by the Engineer.
- o) Wood oiling, when employed as a substitute for painting timber work to be of linseed oil with a small quantity of dammer oiled up with it or red ochre.

37. Glassier work.

- a) The glass when not specified shall be sheet glass of the best quality weighing 6.5 to 7.5 per sq. meter.
- b) All glass shall be free from speck, blisters and all other defects, set in good putty and the rebate neatly chamfered.
- c) All putty shall be made of best whiting and oil, the whiting to be specially dry and passed through a sieve of 45 meshes to the inch, and to be mixed with as much linseed oil as will form it into a stiff paste. This after being well kneaded shall be left for 12 hours and worked up in small pieces till quite smooth. If the putty become dry, it should be restored by heating and working it up again while hot. The putty to be colored to suit the color of the doors or windows.
- d) All glass to be out to fit the rebates of the sashes truly.
- e) All glass to be properly bedded puttied and back puttied and pinned to the frames with hands finished in workman like manner. Plate glass to the frames with wooden battens without extra charge.
- f) No glazing to be considered complete until all stains have been removed from the surface of the glass.
- g) All glass shall, if they become loose during one year, be re-fixed and re-puttied by the Contractor without extra charge.
- h) The contractor shall make good without extra charge any glass broken before the completion of the work, unless it is proved that the breakage did not take place through the neglect or carelessness of the Contractor's men or through bad work done by them.
- i) Job work, such as re-fixing old glasses, will be paid as per job or the Contract or will have to supply labour and material at rates fixed with him, the work being executed under departmental supervision.
- j) When sheet glass is specified it should be of the best quality of sheet glass weighing not less than 6.5 to 7.5 kg. per square meter.
- k) When plate glass is specified it should be, unless otherwise described, polished patent plate glass of the best quality. It should be of the usual light color, glass of the Second quality will not be accepted unless such glass described in the tender.
- l) The plate glass should be of that thickness mentioned in the specifications or in the

tender. If glass of the specified thickness be not used, it will either be rejected or a lower price paid for it, at the option of the Engineer.

m) All the windows shall be cleaned all damaged putty or glazing shall be repaired, and the whole left perfect at the completion and rendering up of the work.

n) In measuring the glazier's work all fractional parts, under 12 mm will be omitted and all above that taken as 25 mm. Net measurements only will be taken from rebate to rebate, but in case of irregular circular Gothic and other shapes the dimensions of the smallest glass out of which the required piece can be cut will be taken.

o) The contractor shall provide his own scaffolding without extra charge.

p) When crown glass is specified it should be of the best kind. Sound and thirds will not be accepted. It should be at least 2 mm thick.

38. Providing Posts, Boring Stave and Sight Rails for laying out Drains.

a) In laying the drains the center of each manhole must be marked by a peg or otherwise as may be determined by the Engineer. The contractor are to dig holes for and set up two posts (10 cm x 10 cm and 6.15 cm long) at each manhole at nearly equal distances from the peg and at sufficient distances there from to be well clear of all in intended excavation, so arranged that a sight rail when fixed level against the posts will cross the center of the manhole. The posts must also be so set up that the longitudinal direction of the rail may be as clear as possible of the direction of any of the lanes of drains covering to the man hole. If wall or buildings afford suitable means of fixing the side rail, the posts may, however, be dispenses with. The sight rails must not in any case be more than 50 meters apart, intermediate rails must therefore be put up if necessary.

b) Boring stave are to be prepared about 50 mm by 25 mm of various length, each length of certain number of meter and with a fixed tee head about 300 mm long. The boring rod must be marked on both sides to indicate its length. According to the circumstances of each case, suitable length of boring rod will be determined upon and the reduced level of the invert of the drains at each sight rail on the line, added to the selected length of boring rod, will be marked by a horizontal line on both posts, or on walls or fences to which the side rail is to be fixed.

c) The sight rail (about 100 mm wide and 25.0 mm thick) is then to be screwed with the top edge against the level marks. The center line of the drain will be marked on the rail, and this mark will denote also the meeting point of the center lines of any converging drains. A line drawn from the top edge of one rail to the top edge of the next rail will be vertically parallel with the invert of the drains, and depth of invert of any intermediate joint may be easily determined by letting down the selected boring rod until the tee head comes in the line of sight from rail to rail.

d) The posts and rails are to be perfectly square and placed smooth on all sides and edges.

The rails are to be painted white on the both sides and tee heads of the boring rods are to be painted black.

e) The posts rails must in no case be removed until the trench is excavated. The drains constructed and permission given to proceed with the filling in.

39. Specifications for CI. Soil, Waste and ventilating pipes. (IS: 1129-1964)

Nomina l dia	Ext. dia.	Wall thickness	Tolerance for ext. dia.	Wt. of pipe for 1800 mm length.
50 mm	60mm	5 mm	+ 3 mm	11.41
75mm	85 mm	5 mm	+ 3 mm	16.52
100 mm	110 mm	5 mm	+ 3.5 mm	21.67
150mm	160 mm	5 mm	+ 4 mm	31.92
Note: Tolerance on wall thickness shall be minus 15%.				

39-A. Specifications for Cast iron rain water pipes. (IS:1230-1968)

Nomina l dia	Ext. dia	Wall thickness	Tolerance for ext. dia.	Wt. of pipe for 1800 mm length.
50 mm	53 mm	3 mm	+ 3 mm	7.5 kg
75 mm	79 mm	3 mm	+ 3 mm	11 kg
100 mm	104 mm	3 mm	+ 3.5 mm	14 kg
125 mm	130 mm	3 mm	+ 3.5 mm	20 kg
150 mm	156 mm	4 mm	+ 4 mm	26 kg
Note: Tolerance in wall thickness shall be +1 mm for all, diameters				

39-B. Specifications for Cast iron rain water pipes. (IS:1230-1968)

Nominal dia	Ext. dia	Wall thickness	Tolerance for ext. dia.	Tolerance in thickness
50 mm	63 mm	6.5 mm	+ 1.5 mm	+ 1 mm
60 mm	73 mm	6.5 mm	+ 1.5 mm	+ 1 mm
80 mm	96 mm	8 mm	+ 1.5 mm	+ 1 mm
90 mm	106 mm	8 mm	+ 1.5 mm	+ 1 mm
100 mm	116 mm	8 mm	+ 1.5 mm	+ 1 mm
125 mm	114 mm	9.5 mm	+2.5 mm	+ 1.5 mm
150 mm	169 mm	+ 9.5 mm	+ 2.5 mm	+1.5 mm

40. Drain Pipes

a) The bottom of every trench shall have a true grade throughout and shall be made in perfectly straight lines, as shown on the plans, or as may be directed by the Engineer. In

case of any loose, soft or bad ground being met with, it shall be excavated to a solid foundation and be filled up to the level of the sewer with concrete or as may be otherwise directed by the Engineer.

b) In the floor of every sewer trench not specified or ordered to be concreted a joint hole shall be formed for receiving not only the socket or the pipes, but the mass of clay to be placed all round every joint of the sewer not concreted. In all cases, except where otherwise especially ordered the trenches for the sewers under twelve feet shall be opened out.

c) In excavating any trench, the materials forming the surface of any road, foot path, garden or field, shall be kept separate and preserved for re-use at the surface when the trench is filled up. Before any road metalling is reused it shall be carefully shifted.

d) After the foundations of any building or other works have been constructed, or the sewer or drain and other pipe have been laid and jointed or the sewer constructed and the manholes and ventilators are made and as soon as the joints have been inspected and passed by the Engineer or his Assistants. The trenches shall be refilled with the materials taken there from. In re-filling the trenches, the utmost care shall be exercised so as not to disturb break or damage the jointed pipes, and immediately over and around every pipe the finest selected material shall be put. No lumps or rock, earth or other material shall be put round the pipe or be thrown into the trenches until the same has been protected by other fine material before referred to. The ground as it is being filled into the trenches, shall be well rammed until it is completely consolidated and water should be used in addition. If considered necessary by the Engineer to aid in the consolidation of the trenches. Very great care shall be exercised so that the trenches are filled in solidly under the pipes with selected material and that no damage to the pipe during the process of consolidation.

e) When the contractor is directed to supply pipes they shall be of the following description. The pipe used in the works shall be the best and of approved quality. All pipes shall be perfectly straight and truly cylindrical, glazed inside and outside, free from cracks and flaws, and perfectly burnt. Those not perfectly straight and truly cylindrical wall and uniformly glazed, free from cracks and flaws and perfectly burnt shall be rejected.

f) All pipes in trenches over 4.5 meters deep and all those in loose ground shall be protected with concrete all round.

g) In laying the drains care must be taken that they are laid perfectly true to the inclination and as far as possible, straight from point to point of the manholes, ventilators or lamp holes, and that all pipes are carefully laid and backed underneath so as to guard against subsidence or fracture of the pipes.

h) The stoneware pipe shall be jointed by forcing two strands of tarred gaskets into the joints, the strands to be sufficiently thick to tightly fit the annular space between the sockets and spigots. The annular space shall then be solidly filled with neat Portland cement, which

shall be forced in to the socket, so as to fill it and a fillet of cement shall then be worked round the outside of the joint. This fillet shall be kept in position by a bend of coarse cloth, which shall be kept moist until the cement has set. Every joint of the earthenware pipes, which is not concreted, shall be further protected by placing, on the outer side of the joint of cement, well-tampered and tenacious clay, so as to completely surround the joint. For this purpose, not less than the following quantities of clay shall be used for every joint on a 15 cm pipe 0.14 Cum, 20 cm pipe 0.2 Cum, 22.5 cm pipe 0.20 Cum, 25 cm pipe 0.35 Cum.

i) After the joints have thoroughly set, the Engineer or his Assistant may inspect the points, and if he has any doubt about its soundness, he may ask the contractor to open out and clear away the cement of any joint that he may select. The same shall be made good at contractor's expense, provided that, unless some defect is found they shall not be required to open more than one joint in 18 meter of pipe. If defects are found, the Engineer may direct them to open as many joints as he may deem necessary. The joints made on one day will not as a rule, be inspected until the following day so that the cement may have a sufficient time to set well before being covered up.

j) The concrete shall be described in a separate specification under the head.

k) Testing Of Joints Of Drain Pipes And Fittings.

Note:- The joints of drainage pipes and fittings will be tested by the contractors without any extra charge to the Municipality as per the specifications described below:-

Smoke Test: - All soil pipes, waste pipes and vent pipes and all other pipes when above ground shall be tested for gas tightness by smoke test under a pressure of 25 mm of water and maintained for 15 minutes after all trap scale have been filled with water. The smoke is produced by burning oily waste or tar paper in smoke machine. Chemical smoke is not satisfactory.

Water Test: - Stoneware and concrete pipes shall be subject to a test pressure of at least 1.5 M head of water at the highest point of the section under Test. The tolerance figure of 2 liters/cm of dia. /km may be allowed during a period ten minutes. The test shall be carried out by suitably, plugging the low end of the drain and the ends of the drain and the ends of connections, if any, and filling the system with water. A knuckle bond shall be temporarily jointed at the top and a sufficient length of vertical pipes jointed to it so as to provide the required test head. Or the top end may be plugged with connection to a nose, ending in a funnel which could be raised or lowered till required head is obtained and fixed suitably for observation.

Subsidence of the water level may be due to one or more of the following causes:-

- i) Absorption by pipes and joints
- ii) Sweating of pipes or joints.
- iii) Leakage at joints or from defective pipes and

iv) Trapped air.

Allowance shall be made for (a) above by adding water until absorption has ceased after which the test should be commenced. Any leakage will be visible and the defective part of the work should be cut and made good. Slight amount of sweating which is uniform may be overlooked. But excessive sweating from a particular pipe or joint shall be watched for or taken as indicating a defect to be made good. Complete record shall be kept of all tests carried out of drains both during construction and after being put into service.

41. Tiling Roofs.

- 1) The whole of the roof shall be covered with flat tiles of the Mangalore Pattern thoroughly burnt, laid fair and square and properly fitting with the catches, resting fully against battens, 30 cm. from center to center or as may be required to the upper surface of rafters or planking and exactly parallel to the eaves.
- 2) The tiles to be in every way equal to a specimen to be approved by the Engineer before the work commences.
- 3) All requisite hip, ridge, valley tiles to be provided and set in the specified mortar and finished in Portland Cement and red lead as coloring substance to render the whole surface perfectly secure and watertight.
- 4) A groove to be cut in wall to receive edge of tiling when it comes against the walls, and a fillet of Portland Cement to be carefully filled in the same .
- 5) The tiles at gable ends to be carefully fixed with wire nails.
- 6) The contractor shall keep whole roof water tight throughout one whole monsoon.

42. Indian Patent Stone Flooring.

The Indian patent stone flooring to be 40 mm. in thickness and shall consist of cement concrete mixed in the proportion of 1:2:3 (with 12 mm chips only). It shall be laid as directed in bays of suitable size and to required slope and neatly finished smooth in any color with lines drawn as per design and as directed. No dry cement shall be allowed to be used for finishing the surface. The surface shall be kept well watered after it is dry for a period of 8 days. The measurement of the work shall be the actual superficial area of the pavement. For terrace, expansion joints of the full depth of the P.S. should be provided for each bay of 10 sq.m. The joints should be at least 10 to 12 mm in width first filled with 30/40 asphalt to be poured in for full depth over it not fine sand to be filled in.

43. Flooring.

Mosaic tile flooring: - The tiles shall be specified thickness of best approved quality. They shall be uniformly smooth. They shall be set in lime mortar cushioning 1:2 or cement mortar cushioning 1:5, 38 mm average thickness and finally set in cement float and left clear after polishing. They shall be laid in slopes as directed. The rate for the work shall be inclusive of supplying, polishing etc. and handling over neat and clean. The measurement of the work

shall be the actual area of the flooring.

Polishing: The tiles shall be polished 3 times with carborendom stones no. 1, 2 & 3 as required on site. After 1st coat joints shall be grouted with neat cement slurry. After polishing with Carborendom stone the tiles shall be polished with jute padding and oxalic acid to get the surface clean and well polished. The tiles shall be cleaned after polishing with soap water.

Thickness of tiles as recommended by I.S.I.

Size	Thickness in mm.
20 cm. x 20 cm.	20 mm.
25 cm. x 25 cm.	22 mm.
30 cm. x 30 cm.	25 mm.

Minimum thickness of working layer.

1) Plain cement tiles	3 mm.
2) Plain cement tiles heavy duty.	6 mm.
3) Mosaic tile (chips up to 6 mm.)	5 mm.
4) Mosaic tile (chips up to 12 mm.)	6 mm.
5) Mosaic tile((chips up to 20 mm.)	6 mm.

Water absorption: 10% maximum after immense in water for 24 hours.

44. Glazed tile work.

Flooring glaze tiles shall be of specified thickness of best quality. They shall be uniformly smooth and regular in size. They shall be set in lime mortar 1:2 or cement mortar 1:5, 38 mm average thickness and finally set in cement float and left clean after filling the joints with white cement or color cement. They shall be laid in slope as directed. The rate for the work shall be inclusive of fixing, setting and handing over neat and clean.

Dado:

They shall be set on cement plaster (1:3) 20 mm thick on brick walls or any other walls with neat cement paste as backing to the tiles. Neat cement paste should properly apply to the tiles so that complete back surface including corners are covered. The joints should be filled in it white or color cement.

Skirting:

Tiles for skirting shall be of specified thickness and size of approved quality. They shall be uniform in size. They shall be set on 1:3 C.S backing about 20 mm thick with neat cement paste backing, covering the full back of the skirting including corners. The joint shall be filled in with cement of required color. The top edge should be properly met with the wall plaster in required fashion with 1:3 C.S. plaster.

Head polishing with Carborundum Stone nos. 1, 2 or 3 shall be done as required on site.

Minimum 2 to 3 coats of hand polishing should be applied to get the surface of tile well polished.

45. Specification for laying in situ terrazzo floor finish:

The terrazzo finish consists of the topping and an under layer and is laid over a layer of base concrete or cushioning layer. The arrangement of the various layers for terrazzo finish laid directly over the ground or laid on a structural slab will be as under. The cushioning layer shall be of lime concrete of 1:2 and the concrete shall be lean cement concrete of mix 1:5:10 if it is to be provided on ground and when it is to be provided on rubble packing it should be 1:2:4 or 1:3:6 as required. The thickness of base concrete shall not be less than 10 cm. The thickness of cushioning layer shall not be less than 3.8 cm.

The thickness of terrazzo topping shall be not less than the following depending upon the grades of chips used.

Grade No.	Size of chips MM	Minimum thickness MM
	1 to 2	6
0	2 to 4	6
1	4 to 7	9
2	7 to 10	12

Where chips of sizes larger than 10 mm. are used the minimum thickness of topping shall be not less than 1/3 times the maximum of size of the chips. The mix for terrazzo topping shall consist of cement without pigments, marble powder, Marble aggregates and water. The proportions of cement and marble powder shall be 3 parts of cement and one part of powder each. For every part of cement, the proportion of aggregates by volume shall be as follows depending upon the size of aggregate:-

Size of Aggregate		Proportion of aggregate binder mix
For grades	0 and 1	1 ¾ parts
For grades	2 and 3	1 ½ parts
For grades	4 and 5	1 ¼ parts

NOTE: The proportions shall be inclusive of any pigments added to cement. The pigments shall be added in the cement as per the I.S.I. 2114-1962.

Size of terrazzo panels should not exceed 2 m² so as to reduce the risk of cracking. The joints shall be so located that the longer dimension of any panel does not exceed 2 m. The panels shall preferably be separated by means of dividing strips.

46. SPECIFICATION FOR MARBLE WORKS

Marble shall be hard, sound dense and homogenous intexture. It shall be free stains, cracks decay and weathering. Before starting the Marble work, the contractor shall get the sample

of Marble approved by the Dy. Municipal Architect and approved, sample shall kept in the custody of site-in-charge. The work shall conform to the sample. Entire Marble work shall be from the same lot at least floor-wise to match the color and quality of marble. It should comply with I.S. 1130-1969.

First quality

plain pure 95% or more white marble of minimum 18mm. thick without any black spots, vein etc. and without any defects of cavities, cracks, holes, flaws, patches, weathering effects, loose or soft material and shall be of fine grained hard and dense. The entire lot shall be from same quarry.

Second quality

Plain pure white marble of min.18 mm. thick having other color i.e. pink, brown, gray, etc. between 5% to 15%.

Third quality

Plain pure white marble of min.18 mm. thick having other colour i.e. pink, brown, gray, etc. between 15% to 30%.

Green

18mm. thick marble having green back ground with dark green vein and flowery pattern etc. fine grained, dense, hard free from any defects, such as cracks, cavities, holes, flows, patches, loose or soft material weathering effect etc. Entire lot shall be from one quarry.

FLOORING

Marble slab or shall be of minimum 20 mm. thick or 18 mm. to 22 mm. in case of tiles and or required size as directed shall be truly horizontal, machine cut all sides shall be to right angle and sides shall be bevelled as required. The slabs/tiles shall be fixed on line mortar 1:2 with filled in with matching white cement. The work shall be kept constantly moist for seven days and then the flooring shall be finished mirror like machine polish and cleaned with solution of adilic Acid and washed cleaned.

DADO

Marble slabs shall be pre-polished and of required sized with 18mm. minimum thick, as directed and shall be truly vertical, machine cut all sides shall be true to right angle and shall be bevelled as required. The wall surface shall be first covered with 1:2 C.S. backing in plumb about 20mm. thick, The marble slabs then shall be arranged in true vertical plans with matching/grains after making suitable holes for electrical wiring, switches etc. The marble slabs shall be fixed with brick wall by suitable copper brass or S.S. pin each. shall have 2 to 3 such pins fixed at the edges. Joints between slabs at any point shall not be more than 1.5 mm and shall be filled in with matching cement.

Cement slurry shall be poured in between the wall and back side of marble and shall be stirred properly to avoid cavities. The surface shall be kept moist for seven days and shall

be sand polished to remove any unevenness and shall be cleaned with the solution of exalic acid and washed where dado is specified if the height is upto ceiling height and pieces shall be so selected that there shall be minimum No. of vertical and horizontal joints and all slabs shall be of same size.

The rates are inclusive of scaffolding, staging, making be-velled of all edges, corners and junctions etc.

47. Anti termite treatment to soil (Pre-construction)

(a) Time of application:- Soil treatment should start when foundation trenches and pits are ready to take mass concrete in foundations, laying of mass concrete should start when chemical emulsion has been absorbed by the soil and the surface is quite dry. Treatment should not be carried out when it is raining or when soil is wet with rain or sub-soil water. In the event of water logging of foundation, the water shall be pumped out and the chemical emulsion applied when soil is absorbent.

(b) Treatment of column pits, wall trenches and basement excavation:-

The bottom surface and the sides (up to a height of about 300 mm.) of the excavations made for column pits, wall trenches and basements shall be treated with the chemical @ the rate of 5 Lit./m² of surface area.

After the column foundations, well foundations and the retaining walls of the basement come up the back fill in immediate contact with the foundation structure shall be treated at the rate of 15 Lit./m² of the vertical surface of the sub-structure for each side to. If water is used for ramming the earth fill, the chemical treatment shall be carried out after the ramming operation is done by dhumas the earth at 150 mm. center close to the wall surface and supplying the chemical with the above dose. The earth is usually refilled in layers and the treatment shall be carried out in similar stages. The chemical emulsions shall be directed towards the concrete or masonry surface of the columns and walls so that the earth in contact with the surface is well treated with the chemical.

(c) Treatment for R.C.C. framed structure:- This treatment is necessary to start from the bottom of excavation for columns and plinth beams. The treatment shall start at the depth of 500 mm. below ground level. From this depth, the back fill around the columns, beams and R.C.C. basement walls shall be treated at the rate of 15 Lit./m² of the vertical surface. Other details of treatment shall be as stated above.

(d) Treatment of top surface of plinth filling:- The top surface of the filling earth within plinth wall shall be treated with Chemical emulsion at the rate of 5 lit/m² of the surface before the rubble soling or sub-grade is laid. If the filled earth has been well rammed and the surface does not allow the emulsion to seep through, holes up to 50 to 76 mm. deep at 150 mm. center both-ways may be made with crow bars on the surface to facilitate saturation of the soil with the chemical emulsion.

(e) Treatment at the junction of the wall and the floor:

Special care shall be taken to establish continuity of the vertical chemical barrier of inner wall surface from ground level up to the level of the filled earth surface to achieve this a small channel 30 + 30 m. shall be made at the junction of wall and column with the floor before laying the sub-grade or rubble) and rod holes made in the channel up to the ground level 150 mm. apart and the iron rode moved backward and forward to break up the earth and chemical emulsion poured along the channel at the rate of 15 Lit./m² of the vertical wall or column surface so as to soak the soil right to bottom. The soil should be temped back into place after this operation.

(f) Treatment of soil along external perimeter of building:

After building is completed, provide holes in the soil with iron rods along the external perimeter of the building at intervals of about 150 mm and depth 300 mm and filling these holes with chemical emulsion at the rate of 15 Lit./m² of the perimeter wall.

(g) Treatment of soil surrounding pipes, wastes and conduits

When pipes wastes and conduits cater the soil inside the area of the foundation the soil surroundings the point of entry shall be loosened around each leak pipe, waste and conduct for a distant of 150 mm and to a depth of 75 mm before treatment is commenced when they enter the soil external to the foundations, they shall be similarly treated unless they start clear of the walls of the building but about 75 mm. for a distance of over 300 mm.

(h) Treatment for expansion joints :

Expansion joints at ground floor level are one of the biggest hazards for termite infestation. The soil beneath these joints shall receive special attention when the treatment mentioned in para. (d) is carried out. This treatment should be supplemented by treating through the expansion joint after the sub-base of rubble has been laid at the rate of 2 lit/m² linear manner.

Chemical mentioned below shall be used for anti-termite treatment to be solid with the concentration mentioned below:

Name of chemical	Proportion to mix concentration by Weight
Chlorpyrifos emulsifiable concentrates	1.0%

This material (chemical) will have to be tested in Municipal Laboratory before using on the site at the cost of the contractor. Site in charge will have to check the results as stated above before using the same. The contractor will have to give 10 years guarantee for the treatment carried out.

48. Special directions to the tenderers for waterproofing of leaky roofs and Sanitary Block

etc,

The Tenderers while quoting the tenders, should note that the maximum care will have to be taken during the construction to avoid the leakages from the Sanitary Units, Terrace Slabs, Chajjas, Drop Walls etc. All the R. C. Components including slabs should be properly consolidated with Mechanical Vibrators and all the joints of the Sanitary Appliances must be properly filled in and made leak-proof.

In case, leakage from the Sanitary Units and terrace and other slabs are detected either immediately after the occupation of the Building and / or up to the time, the liability period is over, penalty of Rs.1,000/- (one thousand) per leaky panel of terrace slabs and per leaky sanitary unit will be imposed. The penalty amount will not be refundable. The defects will have to be rectified without any extra cost and within a period of one month from the date of intimation, failing which an and additional penalty of Rs.5,000/- (five thousand) will be imposed. These penalties will be recovered either from the running bills or final bill or from retention money as the case may be.

Tenderers / bidders should note that the guarantee period for waterproofing works and soil treatment works will be ten years from the dates of completion of the whole works towards this guarantee the contractors are required to furnish a bank guarantee from any of the bank. On municipal approved lists in the proforma of bank guarantee to be obtained from the office of the chief accountant for the amount equal to 5 % of the actual cost of the waterproofing and / or soil treatments works carried out subject to a minimum of rs.2,500/- in the case of tenders only for the works of waterproofing to terraces and / or sanitary blocks the amounts of the bank guarantee shall be equal to 5 % of the actual cost of the whole work. The aforesaid bank guarantee shall be required to remain valid for a minimum period of six months beyond the period of ten years from the dates of the completion of the works. The three percent retention money will not be refunded unless this bank guarantee is received.

49. Special directions to tenderers for Guniting works

The Tenderers are requested to inspect the site personally and observe the scope of work. Cement used on guniting work shall be got tested as per relevant I.S.Specifications as directed.

After completing the guniting job, contractor will have to remove all debris and leave the work site clean of all dust, stains etc. Nothing extra will be paid for removing such debris.

Wherever necessary and directed the corroded reinforcement of slabs, beams and columns, shall be replaced by additional reinforcement, paid as per F.M.B. Items of the schedule at the time of the execution of the work.

Wherever required guniting work will be done in two layers especially for columns.

The tenderer will have to make good without any extra payment, any damage or loss to the Municipal property while executing the work. Surfaces which do not receive guniting shall

be protected with waterproof paper or other adequate means, adjacent structures or ground which would be damaged by guniting by dust or rebound shall also be protected.

The electrical work as dismantling the existing electrical wiring and installation etc. shall be carried out through approved registered electrical contractors of appropriate category.

The tenderer will have to make adequate shielding arrangement by putting necessary hoarding, screens etc. so as to not to effect the normal working of the activities without any extra payment.

50. Specification for Guniting works

Air pressure shall be about 60 lbs/in². The operating air pressure shall be uniform and proper nozzle velocity shall be obtained. The water pressure shall be 70 to 75 lbs/in and shall be uniform. Water shall be free from Chemical Compound and other impurities.

All surface where gunite is to be applied shall be clean and free of loose materials, cleaning of concrete surface and corroded steel shall be done by sand-blasting only.

The water content shall be regulated so as to obtain a mix that will be plastic enough to give good compaction and a low percentage of rebound but stiff enough not to sag.

The nozzle shall be hold at the proper distance normally within 2 to 3 feet and as nearly normal to the surface to be gunited as possible.

All sand pockets behind reinforcement shall be cut away and removed.

All rebound from the surface shall be removed.

The gunite shall be brought to finished lines in neat and workmanlike manner.

All surfaces before receiving gunite shall be thoroughly cleaned. Adequate and safe scaffolding shall be provided so that the nozzle man can hold nozzle at the correct angle and distance from the surface of all parts, for uninterrupted working and proper finishing.

Augment control: Adequate ground wires shall be installed to establish the thickness and surface planes of the gunite built up. Both horizontal and vertical ground wires shall be installed at and offsets not clearly established by from work.

Guniting thickness: Each layer of gunite shall be built by making several passes of the nozzle over the working area. The gunite material shall emerge from the nozzle in a steady stream. When the flow become intermittent the nozzle man shall direct the flow away from the surface, except when guniting through reinforcing bars the nozzle shall be hold closer and at a slight angle to permit better encasement and removal of rebound. Special care shall be taken that no loose material is left behind reinforcing bar.

Nozzle Velocity: The gunite tends to become substandard due to improper nozzle velocity is attained when rebound is reasonable and slight stream appears on the surface due to tamping effect of the steam.

At higher velocities the strength decrease. The decrease is due to the interference of nozzle material particles with rebound material causing porous mass in place.

Under size compressor, long nose, large diameter tips cause low velocity. The compaction is poor and the rebound is more.

xii) Rebound: The amount of rebound depends upto many factors such as hydration efficiency, water cement ratio fine aggregate content, nozzle velocity and grading angle of nozzle flow, distance of impact, application thickness and skill of nozzle man.

The quantity of rebound for well executed gunite work would range from 15 to 25% for vertical walls and 30 to 40% for overhead wall. During the initial stages the percentage of rebound is excessive but it soon diminishes after a plastic cement sand cushion has been formed on the surface of application permitting the sand particles to become embedded in freshly laid gunite. The percentage of rebound is also effected by the distance of the nozzle from the application surface. The amount of rebound be generally held than acceptable minimum if the distance between the nozzle and application surface is about 3 feet and the nozzle is as nearly perpendicular to the application surface as possible. Grading of rebound is usually much coarser than the original mix itself since only the larger particles tend to all tank. Refuse of rebound is not permissible.

In case the rebound materials is to be reused the same shall be thoroughly washed and dried and screened.

xiii) Construction joints :- These shall be tapered to a thin edge over a width of 1 foot. The entire joint shall be thoroughly cleaned and wetted prior to the application of additional gunite.

xiv) Preparation of succeeding layers: - Where a layer of gunite is to be covered by succeeding layer, it shall be first allowed to take its initial set. Then all loose laitance and loose material shall be removed by booming. Sand blasting or water jetting. In addition the surface shall be thoroughly sounded by a hammer for hollow areas resulting from rebound pockets or lack of bond which shall be cut out and replaced during the next layer. Surface to be shot shall be damp. Guniting shall be laid to a total thickness of 40 to 60 mm in one operation as specified.

xv) Curing:- Curing shall be done for at least 7 days . Membranes curing is permissible.

xvi) It is highly important that all unsound material be removed before applying gunite. Improper preparatory work is responsible for many failures. The final prepared surface shall be critically examined to see that it is sound.

New reinforcement shall be anchored into the beam and the gunite finished with a hamper at the junction of slab with beams as directed. No extra payment shall be made for making the necessary groove in beam and for chamber etc.

EPOXY RESIN: A coat of epoxy resin is to be applied to the old concrete surface after the same has been thoroughly cleaned of all dust, rust loose particles etc. The epoxy resin is used to bounding the gunite to the old concrete and is to be used in accordance with the

manufacturer's specification. Epoxy resin based on 'Araldite' formulation is manufactured by M/s .Ciba Geigy of India Ltd., Similar product is also manufactured by 'Dr. Deck's and 8 Mundoz Corporation. The resin is to be applied to the prepared concrete surface or steel and the fresh concrete or gunite applied as soon as possible but always during the open time of the adhesive.

Extracts from the literature based on 'Araldite" based formulation are reproduced herewith for general guidance only.

- a) Preparation of surface: To obtain good adhesion it is necessary to have a clean and sound surface. Dust and loose particle resulting from pre treatment shall be removed by vacume cleaning or all free air blast.
- b) Mixing: The resin and hardener shall be thoroughly mixed before in the dry filler. The mixed ready to use adhesive shall not contain lumps of up wetter filler and should be of a uniform co lour. For a total weight of 1 kg. or less hand mixing shall be sufficient. For quantities in excess of 1 the use of mechanical mixer is recommended.
- c) Plot life and open time: The plot life is the period during which the ready to used 'Araldite' based formulation must be applied after this period the mix can no longer be worked and will have begun to set in container:

Table – I	
Mix temperature	Pot life in minutes
250 c	90
300 c	60
350 c	45

(The figure above are for batches less than 1 kg)

The "Open time" is the maximum period of time allowable between application of "ARALDITE" adhesive and purring the fresh concrete of gunite. Exceeding the 'open time' would result in considerably reduced adhesion. The adhesive should be applied to the perforated surface as soon as the components have been mixed and fresh gunite shot immediately.

Accurate knowledge of 'open time' is essential in case the work is interrupted. Any delay between mixing application will reduce the 'open time' fresh gunite must be shot before the adhesive begins to gel.

Method of application – May be applied by hand using brushes broom, squeegees or any other suitable applicator.

Suitability of the fresh concrete:_ Best results are obtained when the water/cement of the new concrete/cement mortar is as low as practicable.

Coverage- 1 kg. of the mixed 'Araldite' adhesive including hardeners and fillers covers an area of 2-3 sq.mtrs. when applied with a stiff nylon bristle brush. However, the coverage

is very much dependent, on the finish of the concrete.

51. General Specification for Cement Concrete (ordinary and reinforced)

51.1 Cement

All Portland cement for use on the works shall comply in every respect with the requirements of the Indian Standard Specification for Portland Cement as issued and amended from time to time by the Indian Standards Institution. The Portland Cement used in the works shall be manufactured in India and shall be of a make and quality to be approved by the Engineer.

Tests: No other make of cement but the one approved by the Engineer will be allowed on the works and the contractor shall not change his source of supply without the approval of the Engineer in writing. The contractor shall produce test certificates to show that the cement is fully up to the specifications and notwithstanding this, the Engineer may at his discretion order that the cement delivered on the work, and which he may consider damaged or of doubtful character for any reason whatever, must be retested by approved testers and fresh certificates of its soundness produced by the contractor at his specification cost. Cement ordered for retesting shall be withdrawn from the work pending the results of retesting. The decision of the Engineer in this respect shall be final and binding on the contractors.

If at any time the Brand or Make of cement specified by the Engineer be not available in the market, the contractor shall use the cement from the Municipal Stores which will be supplied to him at the rate specified delivered ex-Municipal Stores.

Stores: Large stocks of cement shall not be kept at the works but only sufficient quantities to ensure continuity of the work. The contractors shall provide and material proper and efficient storage sheds for the cement on the works. The floor of the stores shall be raised at least 230 MM from the ground in order to protect the bags from moisture. No cement damaged by exposure or otherwise will be allowed to be used in work but shall be removed at once from the site.

Package: The cement shall be supplied in sound and properly secured and sealed bags weighing 50 Kg. of cement. The rates entered in the Bill of quantities and rates must be held to include the cost of haulage to the work, housing and protecting from the weather, risks of every kind, and all expenses connected with preparing the cement for use and with using it in the work.

51.2 Sand

All the fine aggregate shall consist of clean, hard strong, durable, uncoated, well-graded particles. When incorporated in the concrete mixture, the fine aggregate shall be free from frost, frozen, lumps injurious amount of dust, mica shells, soft or flaky particles, shale, alkali organic matter loan or other deleterious substances. The sand shall be taken from a source approved by the Engineer. If the Engineer considers it necessary it shall be washed. The cost of washing must be included in this price for the concrete work. All sand shall pass

through a sieve having meshes not more than 1/4th inch wide and if the Engineer shall require it, it shall be screened before use at the expense of the contractor.

In no case shall fine aggregate be accepted containing more than two percent, by dry weight, not more than three and half per cent, by dry volumes, not more than five percent, by wet volume of clay, loan of silt. If any sample of fine aggregate shown more than five percent of clay, loan silt in one hour's settlement, after shaking in an excess of water, the material represented by the sample will be rejected. If necessary, silt test shall be taken by the Engineer.

Storage.

All fine aggregate shall be stored on the works in such a manner as to prevent the intrusion of foreign matter. The fine aggregates shall conform as nearly as possible to the following sieve analysis.

S-Sieve. Designation	Percentage retained
480	Nil
240	0 to 13
120	13 to 37
60	33 to 85
30	80 to 90
15	90 to 98

A mixture having the lowest possible void content shall be used.

This description of the fine aggregate shall not be interpreted as admitting the use of stone or slag screenings unless authorized.

51.3 Coarse Aggregate

Quality of coarse aggregate: -

The whole of the ingredients of the coarse aggregate shall consist of rock, gravel or Quality of coarse other inert material. The particles of aggregate, coarse aggregate shall be of clean, hard tough, durable material, free from vegetable or other deleterious substances, and shall contain no soft flat or elongated pieces. All coarse aggregate shall be stored on the works in such a manner as to prevent the intrusion of foreign matter. If it is considered necessary, the Engineer may order it to be washed and screened. The contractor shall state in his tender the source from where he will obtain the aggregate and he shall also include in his price for concrete the cost of washing.

If screening is necessary the cost shall be borne by the contractor.

The coarse aggregate shall consist of: -

Grading of coarse aggregate	1. metal no. 2 20 to 25 mm.
	2. metal no. 1 3 to 12 mm.

The whole of the aggregate shall pass a screen having meshed not greater than 25 mm. square and shall be retained on a screen having meshes 6 mm². The materials may be tested for voids before the work is commenced and at intervals during the course of construction, as may be necessary and the proportion of the different grades in the coarse aggregate fixed by the Engineer so as to secure a well grade material varying from 6 mm to 25 mm. The different grades of the coarse aggregate shall be measured by means of suitable boxes and in such proportions as may be approved by the Engineer.

51.4 Water

The water shall be clean and free from injurious amounts of oil, acid, alkali, organic or other deleterious substances. The quantity of water added to the materials for making concrete shall be properly under control and must be measured.

51.5 Reinforcement

The steel to be used in reinforced concrete work shall comply with the requirements of Indian Standard Specification, IS: 432 (Latest).

Specifications for High Yield strength steel deformed Bars (Tor Steel)

The tor steel to be used in the works should be of grade Fe 415 conforming to IS:1786 (Latest). or IS:1139 (Latest).

If any steel does not in the opinion of the Engineer comply with any of the tests specified under above IS codes, the Engineer may reject the lot or lots from which the sample or samples are taken and the same shall not be used in the works but shall be removed there from.

All steel used for reinforcement shall be free from loose or rust which must be removed with a stiff wire brush. Bars also be free from oil or paint. The steel should be properly braced, supported and otherwise held in position so as to prevent displacement while concrete is put in. The correct number and size of reinforcing bars, stirrups and binders shall be provided and placed in position strictly according to the contract and plans. This shall be looked after with proper care and checked over by a competent foreman personally and finally before pouring the concrete.

All protruding bars from columns, beams and slabs to which other bars are to be spliced later on must be protected from rusting by a coat of thin neat cement grout. All bending shall be done cold, gradually, evenly and without jerks. A jerky action is likely to snap or crack the steel.

51.6 Specifications for the use of plastic cover blocks: -

As per IS: 456-2000 (p. 47) clauses no 26.4.2 table no. 16. Nominal cover to meet durability requirements

exposure	Nominal concrete cover in mm. not less than
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Mild	20
Moderate	30
Severe	45
Very Severe	50
Extreme	75

Notes: -

- a. For main reinforcements up to 12 mm. dia. bar for mild exposure the nominal cover may be reduced by 5 mm.
- b. Unless specified otherwise, actual concrete area shall not deviate from the required nominal cover by +10 mm.
- c. For exposure condition 'severe' & 'very severe' reduction of 5 mm. may be made where concrete grade is M-35 and above.

51.7 Moulding and False Work / Form Work

All timbering for moulds and false work to be used in connection with reinforced work shall be strongly and firmly erected. The moulds must be planed smooth and free from knots, holes, open joints and other imperfections. They shall be coated with mineral oil or other suitable materials to prevent the concrete adhering to the surface of the timber. The slabs centering shall be covered with double wazed water proofing paper or as directed if found necessary by the Engineer. Nothing extra will be paid for this.

The false work should be properly structured and braced in at least two directions and strong enough so as to be perfectly rigid and unyielding during the operation of filling and ramming the concrete. The timbers should be of sufficient thickness and scantlings of such a good quality as not to warp, deform or deflect the concrete.

The whole arrangement regarding the dimensions and construction of the false work shall be to the entire approval of the Engineer and shall be of proper size so as to bring out the completed work of the required dimensions.

Before filling the forms care shall be taken to see that the reinforcements are in their proper and ultimate positions and thoroughly secured from being disturbed during the filling and ramming of the concrete and that the moulds are absolutely free from dried up cement or concrete, any dust, pieces of wood, rags and projecting nails.

The arrangement of the forms and centering shall be such that the slab centering and sides of beams and column forms may be removed first allowing the bottoms of beams and girders to be supported for longer time.

51.8 Mixing and placing of concrete ingredients and measurements of materials

The concrete shall be composed of water, Portland cement (or Slag cement as and when directed by the Engineer), fine aggregate and coarse aggregate. All sand and aggregate used on the works shall be carefully and accurately measured by volume in suitable gauge boxes

and in quantities to the entire satisfaction of the engineer, and the cement to be added to the aforesaid mix shall be either by one or two fully sealed bags, or by weight the water being added to the dry mix in a manner in which it can be properly controlled and measured. The cement shall be measured by sealed bags or by weight. One bag of cement shall weigh 50 kg. Volumetric measurement of cement shall not be permitted. If loose cement is used, quantity of cement shall be weighed before being put in the mixture or mixing platform. Water shall preferably be weighed or measured in liter-cans. Buckets shall not be used for measuring water.

51.9 Proportions (For Volumetric Batching)

The proportions of cement, sand and aggregate for the concrete shall be 1:3:6, 1:2:4, 1:1.5:3 or 1:1:2 by volume or weight, and shall generally consist of the quantities as given below per bag of cement.

Proportion of ingredients	Quantity of material per bag of cement		
	cement	sand (cum)	aggregate(cum)
1:3:6	1 bag	0.105	0.183
1:2:4	1 bag	0.061	0.142
1:1.5:3	1 bag	0.053	0.106
1:1:2	1 bag	0.035	0.061

The maximum quantity of water to be mixed per bag of cement of 50 kg shall include the free water carried by the aggregates, but correction shall be made to this quantity of water according to the wetness of the aggregates as per instructions of the engineer.

51.10 Consistency and Slump Test

It is necessary that the concrete shall have the desired workability and give the maximum yield per bag of cement. If the first batch is too stiff, either sand or coarse aggregate or both must be adjusted until the desired work ability is obtained. If it is too wet, either sand or coarse aggregates or both can be added as appear desirable. When the correct proportion has been ascertained, they must be carefully noted and adhered to until there is a change in the condition of the materials supplied. In order to test the consistency of the mixed concrete, slump tests shall be made by the contractor as and when required by the Engineer, and these slump tests shall be carried out in the following manner:-

The test specimens shall be formed in the mould of No. 16 gauge galvanized metal in the form of the lateral surface of the frustum of a cone with the base 200 mm. in diameter, the upper surface 100 mm. in diameter and the attitude 300 mm. The base and the top shall be open and parallel to one another and at right angles to the axis of the core. The mould shall be provided with foot pieces and handles.

When the test is made at mixer, the samples shall be taken from the pile of concrete

immediately after the entire batch has been discharged.

The mould shall be placed on a flat, non-absorbent surface such as a smooth plank or a slab of concrete and the operator shall hold the form firmly in place, while is being filled, by standing on the foot pieces. The mould shall be filled to about one fourth of its height with the concrete, which shall be then puddled, using 20 to 30 strokes of a 12 mm. rod pointed at the lower end. The filling shall be completed in successive layers similar to the first and the top struck off so that the mould is exactly filled. The mould shall then be removed by being raised vertically, immediately after being filled. The moulded concrete shall then be allowed to subside until quiescent and the height of the specimen measured.

The consistency shall be recorded in terms of mm. of subsidence of specimen during test, which shall be known as the slump.

Slump – 300 mm. Minus of mm. of height after subsidence. The allowable slump for concrete in the road slab shall be between 38 mm and 64 mm.

51.11 Compression Test

If the Engineer so desires compression test for concrete shall be carried out by the Contractor at their own cost and in accordance with the provisions of the Code (B) for R.C.C. Structures vide Appendix- XVIII and the results shall satisfy the provision of I.S.S. 456 (Latest)

51.12 Mixing of Ingredients

The concrete shall be mixed in a batch mixer. The capacity of the drum shall be such that only whole bags of cement are used in each batch if such a mixer is not brought the contractor shall use of box 30.5 cm. x 30.5 cm. x 30.5 cm. for measuring 0.2 Cum. of cement to allow for looseness. Mixing shall continue for 2 minutes after all materials including water, are placed in the drum and before any part of the batch is discharged. The drum shall be revolved not less than 14 and not more than 18 revolutions per minute. The drum shall be completely emptied, before receiving materials, for the succeeding batch. The volume of the mixed materials of such batch shall not exceed the mixer manufacturer's rated capacity of the drum. The drum shall be thoroughly washed out when mixing operations cases for any period longer than 1 hour. Mortar or concrete that has partially set shall not be re-tampered by being mixed with additional materials or water.

Hand Mixing

Hand mixing when allowed by the Engineer shall be carried out in the following manner, and shall be done on a watertight platform or trough at least 2 meters x 4 meters with three side of sufficient depth to prevent the materials from being shoveled off during the operation of mixing. The actual mixing shall be carried out by two or more then opposite each other, using square ended shovels (not powras).

The specified quantity of sand for the batch of concrete shall be spread out first on the platform or trough, making a level heap about 15 cm. deep and on the sand the specified

quantity of cement shall be spread. All the dry sand and cement shall be turned over with the above at least three times until the mixture is of a uniform color. Each shovel should leave the shovel with a spreading action as a turning. The specified quantity of coarse aggregate shall now be added and the whole mixture turned over again at least three times. The specified quantity of water shall next be added slowly through a hose attached to a watering can, while the process of turning the mixture over is being carried out. The mixing shall be continued until the whole batch has reached an even consistency and the mortar is spread evenly through the batch. If any other method be adopted the same shall be previously approved in writing by the Engineer.

The water must not be added by bucket or bhisti's bag to the dry mixed materials. After mixing the concrete must be placed immediately, within half an hour completion of mixing.

51.13 Placing Concrete

All forms shall be absolutely clean and free from shavings or foreign matter before any concrete is placed. All concrete must be deposited in the forms within 10 minutes after leaving the mixture and the concrete should be worked round the various reinforcements, carefully by means of rods and small beaters, and thapis, care being always taken to see that no reinforcement is disturbed from its position and no voids are left; the sides of the forms being gently tapped by spades and thapis to ensure proper filling and uniform outside surface. A mechanical vibrator shall be used during placing of concrete in column footings, column plinth and floor beams and in such other places as directed. All beams and slabs shall be filled to the top surface in one continuous operation, i.e., from the bottom of the beam to the top floor construction. The filling of the column shall be continuous operation from its bottom to the bottom of the beam or girder.

In case where it becomes necessary to stop concreting for any line of beams and girders before completion, the concreting shall be stopped only directly over the center of the column making a vertical joint and allowing one half of the column to become the bearing surface for the future adjoining beam. The floor slab shall be filled up together the beams on which they are resting.

Concreting after it has been placed in the forms and begun to set should not be disturbed but the exposed surface should be kept damp or covered with water for at least eight days to ensure curing.

51.14 Removal of Centering

In no case shall the centering of any concrete work be removed without obtaining the special permission of the engineer or his Assistant. Proper care shall be exercised while removing the centering to avoid jarring the structure or throwing heavy form from the floor. Generally nothing less than the following times should elapse between the filling in of the concrete and removal of the forms: -

Type of form work	Min. period before striking form work
Vertical form work to columns, beams and slabs	16-24 hrs.
Soffit form work to slabs (Props to be re-fixed immediately after removal of form work.)	3 days
Soffit form work to beams (Props to be re-fixed immediately after removal of form work.)	7 days
Type of form work	Min. period before striking form work
Props to slabs 1) Spanning up to 4.5 m	7 days
2) Spanning over 4.5 m	14 days
Props to beams & arches 1) Spanning up to 6.0 m	14 days
2) Spanning over 6.0 m	21 days

After removal of the centering any roughness or irregularity on the exposed surface of the work shall be made good by thin grouting of cement or a cement wash and the whole surface shall be so finished as to present an even and uniform appearance. No plastering will be permitted on the surface.

51.15 Testing Samples of Cement Concrete.

(a) All concrete used in Municipal works shall be tested for compressive strength at the Municipal Materials Testing Laboratory generally as specified under I.S. No. 456 of 1957. The above specifications do not cover leaner mixes such as 1:3:6 and below. Ordinarily it is not necessary to test the compressive strength if tested in the same manner as given under I.S.S. referred to above. The minimum strength required for 1:3:6 concrete shall be 70 kg/Sq. cm. for 7 days and 100 Kg./ Sq. cm. for 28 days.

(b) If the quantity of concrete to be laid on any day is less than 3 brass, the testing of concrete may not be insisted upon by the Engineer at his own discretion. If however, the quantity exceeds 3 brass test specimens must be taken and sent to the Municipal Laboratory for testing.

(c) 15 cm specimen shall be made for every sample and 3 of them tested for 7 days strength. If the average of these 3 specimens gives the specified compressive strength, no further tests after 28 days shall be carried out. In case the 7 days test is unsatisfactory, the remaining 3 specimen shall be rested at the age of 28 days and on only the average strength of the 3 specimens at 28 days shall be taken into consideration for further action, if any. The average of the strength of the 3 specimen shall be accepted as the compressive strength of concrete

provided the difference between the minimum and the maximum strength of the three specimen does not exceed tests shall be made unless the minimum strength is greater than the strength specified, i.e., 100 kg./ Sq. cm., for 7 days and 150 Kg./ sq.cm. for 28 days. If the average of the results of the tests carried out at the age of 28 days are also unsatisfactory, the contractors shall be required to take immediate steps as will be directed by the Engineer in respect of such works at the risk and cost of the contractors.

The steps may include partial or whole demolition of such works, heavy penalty, blacklisting of the contractors concerned and such others. The results of tests conducted at Material Testing Laboratory shall be taken as final and binding on the contractors concerned. In case of any dispute the decision of the Municipal Commissioner shall be binding on the Contractors.

(d) A record showing the location of the test specimen and daily progress of the work done should be kept by the Engineer-in-Charge and should be countersigned by the Contractor or his representatives. In case this record is not countersigned by the contractor or his representative the record kept by the Engineer-in-charge will be considered as correct and binding on the contractor.

(e) The contractors will have to carry out the necessary tests for different materials to be used on site and also for testing crushing strength of different mixes of concrete at the Municipal Material Testing Laboratory. The Contractors will have to pay the necessary charges, rates or fees for various tests as per the rates or fees as per schedule in force at the time of testing. The rates or fees for various tests will be available with the Laboratory In charge. Municipal Material Testing Laboratory, Asphalt Plant Compound, S.K.Ahira Marg (Behind Passport Office) Worli, Mumbai – 400 025.

52. Specification for R.C.C. Piles

The contractors shall provide necessary materials, plant etc. required for driving. The tube or tubes for driving shall be in exact position perpendicular and plumb while being driven. Cast iron sheets, if provided shall be of approved size and quality at bottom. In the event of the shoe being broken during driving, the same shall have to be replaced without any extra cost. The tube shall be driven by two-ton hammer upto refusal.

Point of Refusal: - Ten consecutive blows from a two-ton hammer from a height of 1 meter does not show sinking more than 12 mm in aggregate. Two or more trials shall be ordered before sinking is stopped.

After the tube is finally driven as above, the reinforcement bars as per design tied together to form a hexagon with 25mm diameter M.S. bars helically bound as stirrups at 75 to 150mm c/c at centers, shall be bent and lowered in wards to fix into the shoe below. The reinforcement bars shall project at least 600 mm. above ground level or above the top of finished concrete pile level whichever is higher. The exposed bar and any wastage shall not

be paid. Pile from bottom of shoe up to bottom of pile cap shall be paid for in running feet. The records shall be kept with reference to a fixed bench mark in the form of Reduced levels. The entries must be signed by the Contractors. The tube shall be filled with cement concrete in the proportion of 1: 1½:3. The coarse aggregate shall be in equal proportion metal No.1 and 2 or as directed. The concrete shall be machine-mixed and proper water cement ratio shall be maintained. The concrete shall be thoroughly consolidated to the entire satisfaction of the Engineer. Excess concrete should be removed from site at once. The top of piles should be finished properly, neatly leveled and finished on all sides.

53. Special Directions for Use of Controlled Concrete

1. All items pertaining to reinforced concrete as contained in the Bill of Quantities shall be replaced with corresponding items of controlled concrete as per I.S. 456 of 1964 or as amended up to-date and also as per specifications for controlled concrete contained in Book of Standard Specifications issued by the Buildings and communications Department, Government of Maharashtra (Re: Book)

2. The Volumetric properties of concrete for various items contained in the accompanying Bill of Quantities shall be deemed to be equivalent to the Grades mentioned in I.S. 456 as below: -

1:2 : 4M.150

1: 1 ½: 3 M.200

3. Minimum cement consumption for M. 150 grade of concrete shall be 15: ½ bags and for M. 200 grade of concrete. The consumption shall be 18 bags for 100 c ft (one bag is assumed to be containing 48 kg. of cement) if the preliminary test involves change in the above cement consumption up to maximum of 6% no adjustment in the cost of item to be paid will be made. The change beyond 6% payment will be adjusted for or against the contractors for the cost of cement only.

4. (a) All reinforced concrete works shall be done with controlled concrete as per mix design on the basis of ideal grading curve method. For this purpose, the contractors may engage the services of the site engineer who is conversant with the design of controlled concrete mix. The mix design works shall be done at the site chowky only, for which the contractors shall keep the necessary equipments like sieves, balance etc. The maximum size of aggregate for R.C.C. works will be 20 mm. The contractors shall appoint a qualified Civil Engineer who is well conversant with the controlled concrete technique.

(b) The mix design will have to be done at the site of works every time and a new batch of the materials (Sand and aggregates), is received at the site even though the materials are being brought from one quarry for the duration of the work. This point is covered in the guidance of tender/contractors.

(c) The Executive Engineer (Building Construction) concerned should issue a certificate to

- Dy. City Engineer (Planning & Design) every time that the controlled design mix is carried out in the laboratory at the site for each work under his supervisions.
- (d) If the contractors fail to carry out the design mix as required every time concreting work is done in R.C.C. works, that they should be fined to the value of 25% of the cost of concrete plus steel, on that particular date.
- (e) The site-in-charge including Asst. Engineer (B.C.) will have to offer explanation for the lapse on the part of the contractor.
- (f) No concreting work will be allowed to be executed unless the Machinery required for designing the controlled concrete are kept for use at the sites.
5. Concrete used for R.C.C. items shall be machine mixed and shall be vibrated with mechanical vibrators.
6. R.C.C. columns shall be filled in stages not exceeding per stage. The centering for one face of every column shall be made up in almost two equal parts. One part will be first fixed in position and then concreting shall be done with mechanical vibrator for the lower half part of the column. The upper part of centering on that face shall be fixed subsequently and then concreting shall be done with mechanical vibrator for the Lower half part of the column. The upper part of centering on that face shall be fixed subsequently and then concreting with vibrators shall be done for half part of the column.
7. The proper cover for the slabs, beams and columns will have to be provided using pre-cast cement. Mortar block or plastic blocks spaced at a distance of 80 cm. maximum in either directions.
8. For R.C.C. work with controlled concrete good quality of shuttering shall be employed.
9. The tenderers are directed to note the above instructions very carefully and quote their percentage accordingly. The items of controlled concrete will replace the items of ordinary reinforced concrete. The rates remaining the same as mentioned in the bill of quantities and no claim for extra item will be entertained.
54. Additional conditions/ directions to the tenderers using ready mixed concrete.
All special conditions/directions for cement concrete work shall also be applicable.
The contractor shall procure RMC from the RMC plant approved by MCGM only if the contractor does not possess his own RMC plant, approved by MCGM.
Ready mix concrete prepared and transported will be as per IS 4926 OF 1976 OR THE LATEST I.S. CODE.
Portland slag cement to be used shall conform to IS 455 & IS 8112 or OPC 43 grade at the specific instructions of city engineer.
No dry mix shall be brought on site and water added there at.
Ready mix concrete will be brought to the site from RMC plant only by transit mixers (agitators)

Every transit mixer will carry delivery challan, mentioning the minimum following details.

Name of Manufacturer and Depot.

Serial No. of challan.

Date

Truck No.

Name of contractor to whom the RMC is being supplied.

Location of contract work.

Grade of concrete.

Specified workability.

Cement content and Grade of cement. (minimum cement required shall be distinctly marked.)

Time of loading.

Quantity of concrete.

Type of admixture.

When the truck arrives on site, the drum should always be speeded to about 10 to 15 rev/min, for at least 3 minutes, to make sure that the concrete is thoroughly mixed and uniform, before discharge.

Testing of Ready Mixed Concrete: - The sampling and testing requirements for ready mixed concrete are the same as those for site mixed concrete. As regards testing of workability following procedure be followed.

After making sure that the concrete has been uniformly mixed, take a sample from the first 0.5 cum of concrete discharge, and do a slump (or compacting factor) test on the sample. If the result complies with the specified requirements, then the load should be accepted, If the results are beyond limits, a further sample should be taken from the second 0.5 cum of the discharge, and if this is satisfactory, the load should be accepted, if not, the concrete load shall be rejected, as the same is not as per the specification range. The specified slump is 75 to 100 mm while carrying out above tests; it may vary by 10 mm. as per IS 4926-1976.

Twelve cubes shall be cast at the plant as well as at the site for every day's work where the concrete is placed.

The admixtures used shall conform to IS-9103-1979 reaffirmed on 1990 or ASTM C-494 of 92 and shall be compatible with the cement used for manufacturing concrete.

All taxed/duties etc. will be borne by the contractors and not by the MCGM.

No extra payment will be made for the use of admixtures.

The defect liability period of 7 years will be the responsibility of the main contractor.

The contractors will make all arrangements & provide an uninterrupted access to R.M.C. plant for municipal engineers to check the ready mixed concrete.

It will be sole right of the Administration to allow or disallow the use of ready mixed concrete

if all the conditions 1 to 15 are not complied with.

55. Special Conditions for the Ready Mix Plant Owners on the Approved List of M.C.G.M. The batching plant along with all accessories and laboratory shall be maintained in working condition for entire period.

Whenever cement concrete is prepared for municipal works, presence of Engineer of M.C.G.M. at the plant is compulsory. The concrete prepared in absence of Municipal Engineer will not be accepted. Further, your representative should show all necessary tests on the spot if demanded by the visiting personnel from the office of City Engineer/ Chief Engineer (Vig.)

For the municipal works, tests mentioned in the list attached along with their period shall be carried out in the plant laboratory and record to that effect shall be properly maintained and shown to the visiting staff. Hand copy of this shall be forwarded to the site of work within 24 hrs. of carrying out the tests.

The plant shall be freely allowed for inspection to the visiting personnel of City Engineer other municipal staff.

The plant owner shall be responsible to supply the Ready Mixed concrete to the contractors to whom he has issued letter for supply, till the completion of that work, as and when required.

The plant owners should follow all instructions given to them from time to time by M.C.G.M. No Fly-ash/pozzolona cement should be used in any of the mix supplied to the municipal works.

The batching plant and allied accessories should be got calibrated every 3 months and certificate to that effect should be available for inspection to visiting officers.

The laboratory should be equipped with all the accessories mentioned in the relevant condition within 25 days of receipt of this approval Failure to comply with the same, will attract penal provision, as per the tender.

The access, leading to the plant should be maintained in good condition, during the period of approval.

The sitting arrangement free of cost should be made for municipal staff, along with the arrangement for keeping records etc. with proper facilities.

The batching plant owner will have the full responsibility for preparing and supplying specified mix of concrete confirming to latest IS specifications.

A separate register will be maintained for stock and consumption of ISI/ASTM marked admixture consumed for R.M.C. mixed supplied for municipal works.

The batching plant owners shall employ minimum one Civil Engineer on batching plant per shift. They will additionally employ adequate number of trained supervisors, one full time mechanic and skilled labourers. The batching plant owner's Engineers should be experienced

and well conversant with the concrete mix design procedure. The batching plant owners not employing such qualified Engineers shall not be allowed to commence with the work. The qualified Engineer shall be available on plant throughout the period of execution of the work. In addition to this, batching plant owners may depute one Engineer during the execution of the work on site.

M.C.G.M. will not supply cement to the batching plant owners/contractors of the work. They shall have to purchase cement from the open market and manufactured by reputed cement companies. The cement shall be of port land slag cement conforming to IS: 8112 and IS: 455 or 43 grade with specific instructions from City Engineer. Cement shall be tested at Municipal laboratory for each and every batch and brand, preferably before its use.

Portland slag cement or ordinary Portland cement of 43 grades will be allowed to be used. The batching plant owners shall provide two independent cement godowns with capacity of 1500 cement bags per work undertaken (alternatively a separate silo having capacity of 75 MT per work undertake must be provided for the municipal works). At least 1500 bags of cement per work undertaken shall be in the godown or 75 MT. of cement shall be in the silo at any time during the progress of the work failing which a penalty of Rs. 500/- per day or part thereof will be imposed and recovered. This penalty will not be applicable for last four M-35 & above cc slabs to be cast. Repeated failure to comply with this condition shall invite further penal action as deemed fit. The R.M.C. work shall not be affected at any time due to insufficient stock of cement or any other aggregates.

The rate proposed in this tender for all concrete and allied works are inclusive of water cost. The batching plant owners shall have to make their own arrangement at their cost for bringing adequate water of potable quality for mixing concrete. Any suitable measures shall be employed by the plant owner to maintain the desired temperature of concrete as per I.S. specifications at the batching plant itself and for this no extra payment will be made.

Water used for mixing of concrete shall be clean and free from oil, salt, acid vegetable matter and other injurious substances harmful to the concrete, it shall meet the requirements stipulated in latest I.S. Code- 456. The water brought for concreting and curing etc. shall be got tested from municipal laboratory (situated at G/North Ward Office) to verify whether it is suitable for above purposes, whenever directed. This testing will be done at the batching plant owner's cost.

The sand shall be of approved quality with fineness modulus between 2.4 to 3.5. The sand will have to be screened to remove the over sized particles at quarry itself and washed at plant before its use, in no case shall fine aggregate be accepted containing more than two percent, by dry weight, not more than three and half percent, by dry volumes, not more than five percent, by wet volume of clay loam, silt. The fine aggregates shall be only river sand. The fine aggregates will be tested and retested as directed by the Engineer till they satisfy

the required norms as per ISI and as specified above.

If course aggregates are found having white spots, the same shall be got tested from approved testing laboratory to eliminate possibility of potential aggregate-alkali reactivity before accepting or using spotted aggregates. The batching plant owners should make the necessary arrangements to stack, the aggregates separately so that they do not get mixed up with each other and/or with the foreign materials and get segregated. The screening of aggregates shall be done if found necessary as directed by the Engineer. Fine and coarse aggregates shall be screened at quarry itself and uniform quality of fine/coarse aggregates passing through different I.S. sieve shall be obtained from the same source. Maximum size of aggregates shall be 25mm. The fine and coarse aggregates shall be free of foreign materials, impurities and same shall be washed before its use.

The batching plant owners shall set up a laboratory at a plant before commencement of the work and at their cost for performing various tests and at least the following machines and equipments shall be provided therein.

- a) Compressive strength testing machine, electrically operated (for cube tests) of 200 tonnes capacity. Calibration made shall be produced before commencement of the work.
- b) Set of sieves required for finding fineness modulus of sand and also for aggregate grading.
- c) Laboratory weighing balance of minimum to 10 kg. capacity.
- d) Aggregate drying equipments, M.S. Tray of 0.6 m X 0.6 m and a kerosene stove or electric hot plate.
- e) Equipment for testing of silt content in sand.
- f) Sieve Shaker (electrically mechanically operated).
- g) Other machines as may be directed by the Engineer of M.C.G.M.

All the test records shall be meticulously maintained in the plant laboratory and made available as and when required.

The batching plant owners must establish this laboratory within 15 days from the date of acceptance of letter of approval. Failure to establish the laboratory in full, penalty of Rs.300/- per week or part thereof per equipment will be imposed till the batching plant owners procure the necessary equipments in good working condition.

Even though it is the obligatory duty of the batching plant owners to have an up to date laboratory at the plant and carry out necessary tests in this laboratory, they shall submit for every day's work of M-25 grade, 3 cubes at the Municipal laboratory for testing for 28 days compressive as well as flexural strength. The batching plant owners shall arrange to send the cubes to the Municipal material testing laboratory at least two days before the date of testing of cubes failing which penalty of Rs.500/- per day will be imposed and recovered from

the batching plant owners.

Whenever the materials, cubes are required to be sent to the municipal laboratory the same shall be transported to the Municipal Laboratory by the batching plant owners at their own cost.

The charges for testing of cubes shall be as per rate schedule fixed for testing by the office of A.E. (Soil Mech.), M.C.G.M. Laboratory at Worli from time to time and the same shall be borne by the batching plant owners.

In addition to above, the cubes for every day's work shall also be tested for 7 days and 14 days strength at the laboratory attached to the plant in presence of Municipal Engineer in charge of the work. The batching plant owner shall cast at least 9 cubes during the concreting of each day's work of M-25 grade & above and test the cubes at site laboratory in accordance with the IS 456 and/ or latest I.S. Code for 7 days and 14 days strength. The acceptance criteria for the test results shall be as per IS 456 and/ or latest I.S. Code.

Quality control in the field may be exercised on the basis of compressive strength. It may be, however, ensured that in such case the materials and mixed proportion remain unaltered, the water content shall be the minimum required to provide the specified workability for full compaction of the concrete to the required density. The maximum water cement ratio shall be 0.42 for M-25 mix & above.

Mix-design to give the target strength as required in accordance with the relevant I.R.C./ I.S. specifications shall be prepared. The same shall be done by batching plant owner and checked by Asst. Engineer/ Executive Engineer (Roads). Whenever fresh lot of aggregates is brought at site by the batching plant owner, the same shall be got checked. For this purpose, gradation analysis of coarse and fine aggregates shall be performed. The necessary correction shall be made in the mix design accordingly.

The mix design shall be carried out as per IRC-44 or I.S.10262. No other method will be accepted.

Before actual starting of M-25 & above concreting work, sand shall be checked for moisture content. Accordingly, quantity of water and sand shall be adjusted.

The minimum cement consumption for various mix grades shall be as follows:

M-10	205 Kg/ Cum.
M-15	310 Kg/Cum.
M-20	310 Kg/Cum.
M-25	320 Kg/Cum.
M-30	340 Kg/Cum.
M-35	360 Kg/Cum
M-40	380 Kg/Cum

No claim for excess cement used shall be entertained. If this minimum cement content

is not sufficient to produce in the field the concrete of strength specified in the drawing/design, it shall be increased as necessary without additional compensation.

For the desired workability the concrete mix of M-25 & above will have a slump of 75 to 100 mm. at the work site, it may vary by ± 10 mm. as per IS 4926 of 1976.

Ready mix concrete prepared and transported will be as per IS 4926 of 1976 or the relevant latest IS code.

No dry mix shall be brought on site and water added thereat.

Ready mix concrete will be brought to the site from R.M.C. plant only by transit mixers (agitators).

Every transit mixer will carry delivery challan, which will have minimum following details.

Name of Manufacturer and Depot.

Printed Serial No. of challan.

Date

Truck No.

Name of the contractor to whom the RMC is being supplied.

Location of contract work.

Grade of concrete.

Specified workability.

Cement content and Grade of cement.

Time of Departure.

Time of receipt at work site

Quantity of concrete.

Type of admixture used.

When the truck arrives on the site the drum should always be speed-ed to about 10 to 15 rev./ min. for at least 3 minutes to make sure that concrete is thoroughly mixed and uniform before discharge.

After making sure that the concrete has been uniformly mixed, take a sample from the first 0.5 Cum of concrete discharge and do a slump test on the sample. If the result complied with the specified requirements, then the load should be accepted. If the result falls outside the limits, a further sample should be taken from the second 0.5 Cum of the discharge and if this is satisfactory, the load should be accepted. If not, the concrete may be rejected as the same being outside the specification range. The specified slump is 75 to 100 mm. while carrying out above tests; it may vary by ± 10 mm. as per IS 4926 of 1976.

Twelve cubes shall be cast at the site where the concrete is placed.

The admixture used shall conform to IS 9103 of 1979 reaffirmed on 1990 or ASTM C-494 of 1992. The admixture shall be tested twice during the work in approved laboratory and test certificates in that effect shall be submitted to M.C.G.M. and compatibility of admixture with

the cement used shall be submitted.

All taxes/ duties etc. will be borne by the batching plant owners.

No extra payment will be made for use of admixtures.

It will be the sole right of the administration to allow or disallow the use of ready mix concrete.

TABLE: 1 Minimum Test Frequencies For Quality Control

Item	Test Check Control Criterion	Frequency
Approval of source of supply of materials		
Cement	Physical and Chemical Test	IS- 8112 IS-455
One for each source supply for approval of source and subsequent when warranted by change in quality in case of doubt.		
Coarse and Fine Aggregate	Physical and Chemical Test (including soundness and alkali reactivity)	IS-383
One for each source supply for approval of source and subsequent when warranted by change in quality in case of doubt.		
Water	Chemical Test	IS-456
One for each source supply for approval of source and subsequent when warranted by change in quality in case of doubt.		
During construction		
Cement	Strength	IS- 8112 IS 455
For each lot of cement received		
Coarse and Fine Aggregate	Gradation received	IS-383
For each lot of aggregate		
	Moisture content	IS-383
Regularly as required subject to a minimum of 2 tests per day		
	Flakiness Index	IS-383
Regularly as required subject to a minimum of 2 tests per day		
	Elongation Index	IS-383
Regularly as required subject to a minimum of 2 tests per day		
Concrete	Workability	
For each transit mixer		

	Concrete strength		Cube samples, as specified for each age of 7 days, 14 days and 28 days (for every day's work).
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TABLE: 2 Additional Quality Control Criterion And Tolerances

Position	Criterion	Tolerance
Cement concrete pavement	Quality concrete Grade M-25 & above	Tolerance level for characteristic strength assessment: 1 in 15
	Workability 75 TO 100 mm, (slump) maximum	+/- 10 mm.

The security deposit of Rs.20, 000/- will be forfeited if any of the aforesaid conditions are not complied with.

NOTES:

The provisional approval gives no right to run a batching plant upon ground which is not the property of the R.M.C. plant owner.

The batching plant owner shall obtain all the prevailing necessary statutory permissions/licenses etc. from various Govt./ Semi Govt./ M.C.G.M. authorities under various Acts applicable to batching plant.

56. MODE OF MEASUREMENTS

Where not otherwise specified, the value of work done under this contract shall be calculated as follows:-

The net dimensions only filling in foundations plinth and other stone masonry or brick walls. Brick, concrete and arching will be measured in the center of the arching, the full breadth and the full thickness of the stone, concrete or bricks in the wall.

In case of plain, curved, moulded or chamfered cut stone work the dimensions of the smallest stone out of which the work can be cut will be taken.

In woodwork the cube measurements are to be taken only on the fullest visible dimensions of the pieces of the woodwork. The overlap of scarfs, projections of tenons etc. will not be allowed, except in the case of girders and joists, which will be measured full.

The superficial measurements of planking will be of the surface seen, and the dimensions of tongues or laps will not be allowed.

Coursed khandkee facing will be paid extra on the walling and deduction will be made for all out-stone work in the facing paid for separately.

For round columns, measurements of the square stone from which it can be out will be taken.

Where frames are included in the items, doors and windows will be measured outside to

outside (clear) of the frames after the door or window is closed. Where frames are not included, shutters will be measured clear between the frames after they are closed and rebates will not be paid for separately. Curved heads, fanlights etc. will be similarly measured. Horns will not be paid for separately.

For walling, the actual cubical content of the masonry will be taken after deducting all openings cut stone work and all other items of works paid for separately.

For cut stone steps, the measurements of only the exposed rise, tread and length of the steps will be taken; overlaps and tails will not be allowed.

Measurements of the plaster will be the whole plastered surface of the wall, after making deductions for openings and for dressings and other portions not plastered. All mouldings which will be required to be worked out true to a template and drawn near clean and level, and all exposed angles and junctions with door frames etc., to be included in the rate for plastering.

Tiling roofs with Mangalore or other similar tiles, The measurements of this work will be taken on the slopes of the roof. Nothing extra will be allowed for ridges, hips, overlaps etc.

Where lead sheet work in gutters, covering to roofs etc. is to be measured superficially, net measurements will be taken. Nothing extra will be allowed for overlaps.

Measurements for lightening conductors will be taken from the highest point of the conductor to the bottom of the earth-plats.

Asphalt flooring will be measured on the actual area covered by the asphalt.

Minton-tiled flooring will be measured on the actual area covered by the tiles.

Porbunder stone and other pavement will be measured on the actual area covered by the slabs.

When rock excavation is measured in depots, 40 percent of the measured quantity will be deducted to allow for voids.

While measuring quantities of surplus earth to be removed from site of work, 30 per cent of material loaded will be deducted from lorry measurements.

56.1 R.C.C. Work

All R.C.C. work will be measured and paid for at the overall design dimensions, increase in dimensions caused by the plaster finish will not be taken into account.

In the case of junctions of two or more members of R.C.C. work, only one of the members will be measured full and no claim for overlap of other members will be allowed either in respect of cubic contents or extension of reinforcement necessary at the junctions.

Junctions of the Tee and or rectangular beams with slab: - beams will be measured upto the top of the slab.

Junction of beams and columns : columns will be measured full.

Junction of columns and footing : footings will be measured full.

Junction of columns and pile caps : pile caps will be measured full.

Junction of pile caps and plinth beams : pile caps will be measured full.

Junction of columns and lintels : columns will be measured full.

Junction of gallery slabs with parapet and drop (apron walls) slabs will be measured full. Chajjas will be measured in sq. mts. arrived at by multiplying length and projection as measured on the top surface exclusive of the vertical edge. Drip moulding watas or any other mouldings will not be separately measured.

56.2 Staircase

Staircase will be measured by the number of steps. Each step shall be taken to consist of riser and a tread, specified or shown on the drawing and the rate will include railing or parapet and all other work detailed in the item of staircase. Every quarter landing will be counted as extra one step and every mid landing as extra two steps. In case of mid landing, no separate allowance will be made for beams and for the strip adjacent to the staircase well, if any, or for parapet or railing or any other work in respect of this strip. In the case of landings at floor level, the landing will be paid as floor slab, Beams, if any at landing level will be measured and paid for as slab. Beams, to the top of the slab and where they constitute a step by themselves, they will not be again counted as steps for counting the number of steps in the staircase.

56.3 Mode of Measurement and Rates for M.S. Reinforcement

The rate shall be on weight basis for 1 quintal of Mild Steel reinforcement. The weight of steel reinforcement incorporated in the concrete will be measured in quintals based on the total computed weights for the sizes and lengths of bars as shown on the plans or as ordered by the Engineer. No allowance will be made for wastage while computing the weight, hooks and bands will be taken into account but not the laps. The lengths of the bars shall be measured correct to two places of decimals in meters and the weight payable would be worked out on the following basis correct to 0.10 of a kg.

Diameter of bars in millimeters	Weight in Kg. per metre.	Diameter of bars in millimeters	Weight in Kg. per metre.
6	0.22	25	3.85
10	0.62	28	4.83
12	0.89	32	6.31
16	1.58	36	9.99
20	2.46	40	9.87
22	2.98		

The wire for tying and devices for supporting bars and maintaining various clearances will not be measured or paid. No payment will be made for pins, clips, binding wires, tack

welding done in lieu of tying, separators, wire chassis and other materials used for fastening and supporting reinforcement in place. If the bars are substituted at the contractor's request and as a result more steel is used than specified only the quantity specified shall be paid. The F.M.B. rate shall include the cost of steel and of cutting, bending and binding, placing, cleaning, supporting etc., the M.S. bars including laps and wastage.

56.4 White Washing, Color Washings Distemper, Oil Painting and Other Painting Works:

In deduction clear opening exclusive of frames will be measured and nothing extra will be allowed for jambs of doors, windows etc. Painting will be paid for at the rates per sq. meter according to the color and number of coats and also ordinarily according to the actual area of the surface painted except as hereafter provided. Moulded works of all kinds unless otherwise stated will be measured by running tape into and over all depressions and elevations.

56.5 Doors and Windows

Framework will be paid for as per actual measurements.

Venetian shutters will be measured, on each side, as one and half times the area of the clear opening of the door or window for the portion of the Venetian shutters.

Glazed portion of doors windows shutters will be allowed for by deducting half of the glazed part including the mesh from the total flat surface.

Portion of doors and window shutters fixed with expanded metal and wire-netting will be allowed for by deducting quarter of such part from the total flat surface.

Steel casement windows will be measured as 25 per cent of the area of one face for painting done on both.

Painting of iron bars for doors and windows will be paid for as per actual measurements of the surface painted.

56.6 Railings and Gates

Painting to all railings and simple grills of teak wood and iron will be paid for as per actual measurements of the surface area painted. Ornamental C.I. or W.I. gates and grills will be paid for one and half times the overall surface for each side painted. Fencing pole or angle iron shall be paid for one and half times the surface of one side for painting done on both sides.

56.7 Trellis Works

Hoop iron trellis work will be paid for painting done on both sides at one and half times the area of one face where the opening are 75 mm. or less wide but only once when the openings are more than 75 mm. wide.

Teak wood trellis work or R.C.C. jallis shall be measured on each side as if there were no openings in cases where the openings are 75 mm. or less in width. In case of openings greater than 75mm. one and a half times the surface of one side will be paid for painting done on

both sides.

Expanded metal and wire netting will be measured on one side only for painting done of both sides in case where the mesh is 50mm. or less. Where the mesh is longer than 50 mm. it will be measured as half of one side, for painting done on both the sides.

56.8 Corrugated and Asbestos Cement Sheets

Corrugated iron sheet of walling or roof will be paid ten % extra over the flat overall area, to allow for corrugations. In measuring and painting Big-six Trafford asbestos sheets, the extra to be allowed will be 25 per cent. In case of dispute regarding mode of measurement or any particular painting work, the decisions of the engineer will be final and binding on the contractors.

56.9 Making Holes for Pipes, Cables Etc.

No extra payment will be made for making holes in walls, slabs, beams etc. for taking through them any pipes for drainage and or water fittings, cables wires etc. and the cost the roof should be deemed to be covered under rates for those items.

57. SPECIAL DIRECTIONS TO THE TENDERERS

57.1 The tenderer shall note that the supply of controlled and non-controlled materials by the Municipal Corporation at the rates stipulated in relevant clauses hereafter will be subject to availability of the materials at the time of actual execution of the work.

57.2 Supply of cement:

M.C.G.M. will not supply cement to the contractors. They shall have to purchase cement from the open market. The cement shall be of minimum 43 grade. Cement shall have to be got tested at Municipal laboratory or any other govt. recognized laboratory at contractor's cost preferably before its use, for each batch. In case the cement test results are not available before its use, the use of the same may be permitted for other works, such as, masonry, lean concrete, plaster etc. but not for R.C.C. works, subject to a written request from the contractor's to that effect and subject to condition that, in case the test result is not satisfactory, the contractor will remove the work done entirely at their cost and redo with fresh cement with required quality. The testing of the cement at recognized laboratory is must.

Only ordinary Portland cement of 43 grade will be allowed to be used unless any other special type of cement, such as Sulphate Resisting Cement etc. is required to be used. Arrangement for procuring special type of cement, if required, will have to be made by the contractors at their own cost. The contractor will have to provide an independent cement godown with capacity of minimum 1000 bags or loss depending upon the nature of work as decided by Engineer under double lock and key system with one lock of the contractors and the other of M.C.G.M. Cement from locked godown will be released only after getting satisfactory test result as per Para 'a' above. Advance bills as per the rules for cement brought at site and

duly tested can be entertained only after getting satisfactory cement test results.

Though the contractors shall have to purchase cement from open market, no claim for any increase in price of cement will be considered. In case where price escalation is applicable under clause No. 74 (b) of G.C.C. for Civil Works for arriving at the total value of 'C' cost of Cement will not be taken into account.

If during the execution of work, the bags are required to be weighed and any shortage is required to be made up by putting extra cement, in the short weight bags, no compensation shall be paid to the contractors for this shortage whether the contractors receive their cement from the supplier or directly from the companies as stated above.

57.3 Supply Of Steel M.S. Round bars etc.

Supply of steel M.S. round bars, Tor-steel, M.S. flats, plates and structural steel.

(a) The C/s should note that all the above steel required on the work will have to be procured by them from the open market from the reputed / approved manufacturers which should confirm to I.S. Specifications.

(b) The steel brought on site will have to be tested in Municipal laboratory or any Govt. recognized laboratory for every lot brought on site. The steel will not be allowed to be utilized until the satisfactory test result is received.

(c) All steel brought on site shall be stored in proper manner as approved by the engineer so as to avoid distortion and corrosion. The Contractors have to maintain proper register for the steel account showing the steel received, steel issued, actual consumption of steel and the balance stock on site to entire satisfaction of the engineer. Further, it shall be obligatory on the part of the contractor to submit monthly, quarterly and yearly statements giving the full account of steel used on works and the balance in hand.

(d) For the purpose of submitting the steel account, the quantity to be accounted for, shall include the actual quantity of steel used on the works as measured and paid for and also allow certain percentages for lapse, oversize diameter unaccountable wastage as given below.

- i) 5 % for laps, chairs, spacers, pins etc.
- ii) 2 ½ % for oversize bars
- iii) 10 % for the unaccountable wastage for scrap.

The percentages shall be calculated on the actual used on works as worked out from the drawings.

57.4 The price variation under clause no. 74 (a) of the General conditions of contract for civil works will not be applicable to this contract and therefore, so far as this work is concerned the same stands canceled. However, for the contracts where the escalation under clause no. 74 (b) will be applicable, the value of 'C' in the formula for material component will be taken as zero. In short, where the escalation will be applicable under clause no. 74

(b) of G.C.C. of C for civil works the escalation of steel will be worked out at par with all other materials.

57.5 The Municipal Corporation is not liable to supply any non-controlled article or any controlled articles. However, if available in the stores, the Corporation may supply the same in the interest of the work. In that case, the contractor shall be charged at the current market rates or their book value whichever may be higher. In addition, the contractor shall be charged Municipal Supervision charges at 10 %. The material, however, will have to be transported by the contractor of his cost from Municipal Stores, anywhere in Greater Mumbai.

57.6 All the materials supplied to the contractors as per condition no. 51.5 above, shall be stacked or stored at the site of work as directed and used only on the work in question and any materials remaining surplus shall not be disposed off or removed by the C/s without obtaining the written permission of the Engineer for the disposal of the surplus materials at the original purchase price. The C/s shall maintain a register account of the receipt and use of the materials to the satisfaction of the engineer and supply monthly statements of such accounts to the Engineer.

57.7 All the materials, where advance payment is made to contractors under respective clause of G.C.C. of for civil shall remain the absolute property of the site of work and shall at all times be opened to inspection by the Engineer.

57.8 Tenderers are requested to fill in the percentage above or below the total amount in the Bill of Quantities and rates and work out the final amount. Unless this is done, their tender will not be considered.

57.9 The percentage rates thus stated shall hold good for all works done under this contract without reference to location of works or quantities.

57.10 The contractors are particularly directed to observe from the specifications what is included in several portions of the works and quote their percentage rate accordingly.

57.11 Percentage rates must be carefully entered by the tenderers and no variation or alteration therein will be allowed by the Commissioner on any account after the tenders are opened.

57.12 Detailed plans etc. will be available for inspection in the office of the Municipal Architect, Engineering Hub Building, 3rd floor, Dr. E. Moses Road, Worli Naka, Worli, Mumbai- 400018.

57.13 All cement concrete whether plain or reinforced shall be generally machine mixed. No hand mixing will be allowed without specific sanction of the Dy. City Engineer.

57.14 The Contractors are particularly directed to specifically state whether they are in possession of power transport vehicles. The Contractors in possession of the same might be given preference in the final award of the tenders.

57.15 Time is the essence of the contract.

57.16 The whole work shall be finished in a workmanlike manner and to the entire satisfaction of the Municipal Commissioner.

57.17 Percentage rate should be legibly written. Erasures or corrections in figures without tenderer's initials will render the tender liable to rejection. The tenderers are also requested to extend the figures in the columns of amounts and to note the totals on each page and work out the final figures at the end of tender. Any irregularity on the point may justify the rejection of the tender.

57.18 For minor details of R.C.C. works and where any modification is desired, the same shall have to be done according to the R.C.C. Code of the Mumbai. Municipal Corporation or as per Indian Standard Specification and as directed by the Engineer.

57.19 In the interest of security of all fittings and fixtures inside each room the contractors shall provide locks, which will be returned to them after the possession of the buildings is taken over by the Municipal Corporation.

57.20 On completion of the work, the contractors shall clean the entire site of work of all loose materials rubbish, brickbats, stone pieces etc. The whole of the unpaved open spaces shall be properly leveled and rolled with a half tonne hand roller. No extra payment shall be made on this account.

57.21 The successful tenderers shall on being awarded the work, prepare and furnish to the Engineers a detailed programme of the execution of the work to be carried out by them item by item and stretch by stretch, e.g., dates of carrying out operations like excavation, foundations and all work up to plinth level, followed by dates of execution of main items like columns, slabs, brick masonry, plastering, flooring painting and plumbing etc. for each floor of the building. Dates for completion of other ancillary works like suction and overhead tanks, compound wall and compound pavement etc. will also be stated. The above programme shall of course, be framed, bearing in mind the clause regarding part completion of the work. The successful tenderer shall be required to carry out the work in strict conformity to the above programme. Any deviation in this respect will be dealt with severely in conformity with the procedure laid down on behalf of the Corporation from time to time. The penalty liable to be charged to the contractor for failure to carry out the work on the above basis will be in addition to that stipulated in the above clause and will be levied at the end of each phase of the work at the rate of 1 percent of the value of the work not carried out in each phase or such smaller amount as the Engineer, whose decision in writing shall be final may decide provided always that the total amount of compensation under the provision of this clause shall not exceed 15 per cent of the estimated cost of the work as shown in the tender.

57.22 The successful tenderers during execution of work shall submit the copies of

challans, bills, octroi receipts in their name for construction materials such as Cement, Steel, Paver blocks, Tiles, Wood work, Drainage & water pipes, etc to the Engineers.

58.0 Contractor shall follow the technical specification as per USOR-2023 for CIVIL /M&E work

Other point to considered :-

- i. The bidder shall include all taxes, duties, and levies. No charges will be paid extra due to ignorance on the part of the tenderer.
- ii. The bidder shall note that while executing the work, if any additions/alteration/commissions required to be carried out then the prior approval of Engineer shall be obtained for each item before proceeding further. It shall be incumbent on the part of the contractor to carry out the same. It is also essential on the part of the contractor to inspect the site before submitting their offer and no claim arising out of ignorance will be entertained later on.
- iii. The Municipal Commissioner reserves the right to accept the lowest or any offer or reject any or all offers as deem fit. Material shall be free from surface defects. Tolerance allowable for thickness/ gauge of material shall be $\pm 3\%$.
- iv. Go-down/store room shall be provided to the Contractor for the protection of material at OR NEAR TO the site till completion of work as work complete same shall be vacate immediately.
- v. The successful bidder will be solely responsible for any damages to the Municipal property, accidents and injurious to human life of contractor's labourers or Municipal labourers. He will be responsible for making good to the damage property & will arrange for the compensation to any loss or damages to human life or site, if caused.
- vi. Penalty @ 1% per week or part thereof subject to maximum limit of 10% of value work not carried out in time is to be deducted from the supplier's bills and as per GCC conditions therein.
- vii. Material on site shall be made clear by the user department before commencing the work.
- viii. Circular no. CA/FRD-1/5 dated 10.05.2016 shall be applicable for this project.
- ix. Ch.Eng. (Roads & Traffic) & DMC(Infra) vide no. DMC/Infra/3732 dt.13.10.2021 has circulated modified PQC guidelines as A.M.C.(P)'s note is approved by Hon'ble M.C. vide MGC/VIP/9612 dt.01.10.2021 is applicable.
- x. Guidelines issued vide circular No.Dir/ES&P/291/MC Dt.31.01.2023 are applicable

- xi. Circular No. Director(ES&P)/6988/II Dt.11.03.2016 is applicable.
- xii. Circular No. CA/ Finance/ Project/19 Dt.04.03.2024 is applicable
- xiii. Circular of Legal Department No.26206 Dt.31.08.2023 is applicable
- xiv. Circular No.Ch.E./M&E/763/MC/Dtd26.08.2021 is applicable
- xv. Circular no.CA/FRD-1/57 of 13.03.2013 is applicable

Executive Engineer (BC)City

CIVIL WORK**BRIHANMUMBAI MUNICIPAL CORPORATION**

Sub:-Proposed works to be carried out at Annabhau Sathe Auditorium in campus of V.J.B.Udyan , Byculla in 'E' Ward on the land bearing CTS No.563(pt). Mazgoan Division in 'E' Ward .

CIVIL ESTIMATE**Bill of Quantity**

Sr.	Item No.	Description	Qty	Unit	Rate	Total Amount excluding GST /VAT
I	STAGE FLOORING & SOUND PIT WORK					
1	R3-CS-SS-23	Providing, detailing, and fabricating as per specifications, transporting to site and erecting ladder / railing using stainless steel hollow pipes of grade 304 including, S.S. fixtures and fastenings, cleats, stiffeners, gussets etc. and all necessary operations straightening, bending, like cutting, drilling, welding, grinding and removing the welding burr, machining if specified, finishing, cleaning etc. complete as directed by Engineer In Charge.	608.00	Kg	620.00	3,76,960.00
2	R3-CS-DD-77	Breaking stems of R.C.C. members viz., columns, plinth beams, beams, piles, pile caps, slabs, R.C.C. walls etc. of any grade of concrete without damaging reinforcement (bars) after removing rust, cleaning the same etc., including removal of debris etc. complete as directed.	2.00	Cu.M.	3,139.00	6,278.00
3	R3-CS-SS-01	Providing, detailing, fabricating and fixing at desired location using hot rolled sections and MS Plates of grade Fe 250 as per specifications and approved fabrication drawings (which are to be prepared by Contractor and got approved from Engineer), transporting to site and erecting structural steel members for all heights & at all levels including provision of necessary erection bolts, fixing bolts, nuts, washers, cleats, stiffeners, gussets, base plate, and all necessary fixtures and operations like preheating as per specifications, straightening, bending, cutting, drilling, grinding, machining if specified, welding, grinding and removing the welding burr and preparing surface for painting with wire brush cleaning and applying two coats of epoxy red oxide zinc phosphate primer of 30 microns each and two coats of Epoxy Corrosion Resistant Enamel paint of 30 microns after fabrication including touching up with spray painting after erection etc complete as directed by Engineer In Charge. (The qty. for this item shall be measured for gusset plates, base plates, bolts in M.T.	8.50	M.T.	90,876.00	7,72,446.00

4	R3-CS-SS-04	Providing, detailing, composite fabricating members like Trusses, N-girders, girders, bracings, supports, purlins, runners, and similar structural steel members fabricated using M.S. hollow tubular steel sections (circular & rectangular pipes), of TATA Structura Make or equivalent conforming to IS 1239 part 1 and 2 and of grade Fe 250 as per specifications and approved fabrication drawings (which are to be prepared by Contractor and got approved from Engineer), including transportation of the same to site, erection of structural steel members for all heights & at all levels, provision of necessary erection bolts, fixing bolts, nuts, washers, cleats, stiffeners, gussets, base plate, and all necessary operations like preheating as per specifications, straightening, bending, cutting, drilling, grinding, machining if specified, welding, grinding, removing the welding burr and preparing surface for painting with wire brush cleaning and applying two coats of epoxy red oxide zinc phosphate primer of 30 microns each and two coats of Epoxy Corrosion Resistant Enamel paint of 30 microns after fabrication including touching up with spray painting after erection etc complete as directed by Engineer In Charge.	4.00	M.T.	86,743.00	3,46,972.00
5	R3-CS-SS-08	Providing, detailing, fabricating and fixing at desired location using M.S. chequered Plates of any hickness and of grade Fe 250 as per specifications and approved fabrication drawings (which are to be prepared by Contractor and got approved from Engineer), including transporation of the same to site, erection at all heights and levels, provision of necessary erection bolts, fixing bolts, nuts, washers, cleats, stiffeners, and all necessary operations like preheating as per specifications, straightening, bending, cutting, drilling, grinding, machining if specified, welding, grinding and removing the welding burr and preparing surface for painting with wire brush cleaning and applying two coats of epoxy red oxide zinc phosphate primer of 30 microns each and two coats of Epoxy Corrosion Resistant Enamel paint of 30 microns after fabrication including touching up with spray painting after erection etc complete as directed by Engineer In Charge.	2.50	M.T.	92,523.00	2,31,308.00

6	R3-CS-PN-22	Providing and applying first single coat of approved primer and three coats of fire retarding paint of an approved make as per manufacturers specifications to any surfaces, at all height and locations as directed including scaffolding, scraping, cleaning and preparing surfaces for painting by any approved means etc. complete as directed by Engineer-in-charge.	265.00	Sqm	454.00	1,20,310.00
	R3-CS-SS-07	Providing and fixing the Chemical Anchor Fasteners as specified below of Hilti Make or equivalent confirming to IS 1367 (Part 3) at required locations and level including drilling the hole, cleaning with blow pump and anchoring the bolt with chemical as per manufacturers specifications etc. complete as directed by Engineer In Charge.				
7	R3-CS-SS-07-b	M12 x 110 foil capsule (HVU) & M12 x 160 Rod	250.00	Nos	327.00	81,750.00
8	R3-CS-SS-07-c	M16 x 125 foil capsule (HVU) & M16 x 190 Rod	136.00	Nos	433.00	58,888.00
9	R3-CS-SS-18	Providing, fabricating, welding and fixing 1.0m high MS pipe hand railing, weight 10 to 12 kg per Rmt including all necessary fixtures, holdfasts, supports and painting with one coat of red oxide zinc chromate primer and two coats of approved synthetic enamel paint etc complete as directed by Engineer In Charge.	93.00	RMT	1,036.00	96,348.00
10	R3-CS-SS-30-d	Providing and fixing structural Profile decking sheet as per particular specification,with GI sheet, zinc coating not less than 275 GSM as per IS 277 and of yield strength 500 Mpa of approved make with specified Base Metal Thickness. The profile shall be structural decking profile having ribs & pitch as per the drawing referred with the embossments (shear groove) on top and side of the ribs for better composite action. The decking sheet shall be fabricated to required form as per the slab design and fixed with Galvanised Iron fasteners, self drilling screws, shear studs as per IS 1367, connectors etc. complete as per design, drawing and direction of Engineer-in Charge. (Refer typical drwg).The sheet shall be filled with 75mm thick M25 grade concrete reinforced with 8mm dia. HYSD bars placed 150mm C/C both ways. Plan area of the sheeting shall be measured and paid. Structural steel frame work shall be paid seperately. With Base Metal Thickness (BMT) (excluding Zinc coat thickness) 1.00 mm thick Profile decking sheet .	12.00	Sqm	1,748.00	20,976.00

11	R3-CS-CH-2	Providing and erecting two legged metal tubular scaffolding (cup lock type) of width 1200 to 1500mm largely free standing using H frames of tubular pipes of minimum 40mm diameter, with base plates fixed or adjustable with necessary clamps, coulders, brackets for projections, joint pins, pulleys and other accessories including steel angle or tubular pipe bracings at adequate intervals, access platforms of metal or timber planks of span not exceeding 1.5 metre centre to centre, horizontal & vertical tubes joint with cup & lock system with M.S. Tubes, M.S. tube challis, M.S. clamps and staircase system in the scaffolding for working platform etc. and maintaining it in a serviceable condition for execution of work including provision of rubber inserts to pipe ends at point of contact with tructure to avoid damage, including ccess ladders with intermidiate platforms. the scaffolding to be suitably braced and anchored to to the building using support systems created temporarily at the opening in walls using verticl and horizontal adjustable propson the exterior side of building structure, upto 25 metre height, above ground level . The rate is inclusive of all materials & labours)	345.00	Sqm	325.00	1,12,125.00
12	CE-16-ABSA-024	Providing / fixing 4.5 mm thk veneer paneling on 12 mm thk. Comm ply with hard wood frame as per drg& stated below.hard wood frame 50 x 40 @ 600 mm. C/c. In both directions as per drawing.frame shall be covered by 12 mm thk. Comm ply with 4.5 mm thk. Veneer as approved by architect.3 coats ofmelamine polish on veneer surface and complete with machine sanding, leveling, applying hard putty,filling gap etc. Including 50 mm thk, 1000 gsm density micron in between frame. Anti-termite treatment to internal surface of frame & ply by aldrex complete with scaffolding etc. (basic rate of veneer - 1500/ sq.mt.)	188.00	Sqm	5,619.00	10,56,372.00
13	CE-16-ABSA-025	Providing / fixing 25 mm thk. , 150 mm high teak wood skirting fixed by screw with 3 coats ofmelamine polish on hardwood frame 50 x 40, flushed with veneer paneling complete.	27.00	Mtr	874.00	23,598.00

14	CE-16-ABSA-026	Wooden stage flooring:- P & f 125 x 37 mm secret t&g. (as per detail given by consultant) scientific kiln drying to under 8 to 9 % moisture content. Teak plank (free from knot, wrap and bend etc.) As per drg. Complete lot of c.p. Teak plank shall have 8 to 9 % moisture content. Then after plank shall be 1800 x 150 x 37 mm or 900 in length x 150 x 37 mm plank shall be fixed by screw in secret groove. Plank shall be fixed in level. applying 3 coats of matte finishing french polish on wooden flooring complete with machine sanding & leveling. Applying hard putty filling gap etc. and necessary polish and shading and again sanding by machine and polish up to reqd. Shade and level. Fixing teak plank on 50 x 50 mm salwood joist or hard wood frame at 600 mm c/c dist. In one direction & @1200 mm c/c in other direction. incl. Anti-termite treatment, scaffolding, leveling, sanding etc. Providing & laying 25 mm thk layer of sand in betn. Wooden frame complete. Incl. 50mm thk micron of 1000 gsm density (item 5b)	36.00	Sqm	9,294.00	3,34,584.00
15	R3-CS-WW-42	Providing & Fixing well seasoned old burma Teak wood skirting of 25mm thickness & 250mm height in the required position & of the profile shown in the drawings including all moulding, grooves rough grounds, raw plugs, if necessary & finished with approved coloured stained matt water based PU coat of ICA or INCHEM of equivalent Make using approved coloured stainers of the same company	60.00	RMT	2,500.00	1,50,000.00
16	CE-16-ABSA-031	Providing & fixing t.w. Moulding of size 75 x 50mm as approved by acoustic consultant with sanding, levelling and 3 coats of melamine polish complete.	60.00	Mtr	1,283.00	76,980.00
17	R3-CS-DD-3	Demolishing brick work in lime or cement mortar including plaster, paint, etc. manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge.	7.00	Cu.M.	627.00	4,389.00
18	R3-CS-MW-41	Providing and laying autoclaved aerated (cellular) cement blocks masonry with more than 100 mm thick AAC blocks in Chemical Adhesive including RCC stiffeners. The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work, racking of joints, scaffolding and curing, etc.	8.00	Cu.M.	8,065.00	64,520.00

		completed as directed by Engineer-in-Charge.				
19	R3-CS-PL-04	Providing and applying 12 mm thick internal sand faced plaster in cement mortar 1:3 at all heights and locations in one coat for masonry (except stone masonry) and concrete surfaces including racking out joints, hacking of concrete surface, watering, finishing, curing, scaffolding etc. complete.	70.00	Sqm	314.00	21,980.00
20	R3-CS-PL-43	Providing and applying Plaster of Paris punning to walls, beams, ceilings, columns in perfect line and level over the base of single coat cement plaster including roughening of existing surface making 6 mm groove at skirting and door, window jamb, sill, lintel, etc. complete. The rate is exclusive of base coat cement plaster.	60.00	Sqm	318.00	19,080.00
21	R3-CS-PN-6	Providing and applying first single coat of approved primer and two coats of luster paint of an approved make and colour as per manufacturers specifications to any surface, at all height and locations as directed including scaffolding, cleaning and preparing surfaces for painting by any approved means etc. complete as directed by Engineer-in-charge	60.00	Mtr	148.00	8,880.00
22	R3-CS-DD-51	Dismantling aluminium/ Gypsum partitions, doors, windows, fixed glazing and false ceiling including disposal of unserviceable surplus material and stacking of serviceable material with in 50 meters lead as directed by Engineer-in-charge	5.00	Mtr	42.00	210.00
23	R3-CS-PS-30	Providing and fixing 600x450 mm bevelled edge mirror of superior glass (of approved quality) complete with 6 mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete.	18.00	Each	1,919.00	34,542.00
24	R3-CS-FUR-09-d	DISCUSSION TABLE - Providing and fixing of Modular table of required size. Table top shall be made of 25mm thick Marine ply (IS 710 : 2010) , FIRE RETARDENT laminate on all sides / surfaces. Sides in 25mm Commercial Plywood (IS 303 : 1989) . All boards components like top, sides etc. are finished with 2mm thick machine pressed PVC edge banding in matching colour. (Rehau Make/or Equivalent) for better impact resistance. Double modesty panel height max 450mm of 18mm Marine ply (IS 710 : 2010) in approved colour and shade as per pre- approved sample. Modesty panels to be separated by min 50mm clear gap between and cut-outs etc. to make to accommodate electrical / data switches /sockets	1.00	No.	27,072.00	27,072.00

		where indicated. Cables from floor to the modesty panel should be concealed / fixed along with the table vertical supports etc. complete. Adjustable levellers to be provided to supports. 2400 x 900 x 750				
25	CE-16-ABSA-038	Providing & fixing teak wood wooden reed putty of size 75 x 50mm thk all along the wall panelling profile & ceiling .reed to be screwed to wood wool board and fabric base and finished with 2 coats of mellamine matt polish after necessary surface preparation all as per design consultant. Reeds to be fixed in proper line and level works including necessary scaffolding etc.	12.00	Mtr	720.00	8,640.00
26	FA-2014-MA-44	Providing & fixing t.w. Partition of 60mm thk & 2450 mm ht made out of 48x35 mm t.w. Frame covered with 6mm thick marine ply (is710) from both sides & finished with 1 mm thk textured decorative laminate for outside . The partition shall be filled with 50 mm thk glass wool and shall be completed as per drawings and instructions of engineer in charge	14.00	Sqm	4,903.00	68,642.00
27	R3-CS-SS-20	Providing and Fixing decorative Teak wood moulded hand rail of 100mm x 50mm cross section supported over 1.0m high railing fabricated using 12mm Sq MS Bar placed about 100mm c/c vertically and 50mm x 5mm MS Flat at top and bottom including applying one coat of red oxide zinc chromate primer and two coat of Synthetic Enamel paint to Iron work and three coats of melamine polish to wood work, fixing the assembly with anchor fasteners or plumbing nails to floor or wall as may be required etc complete as directed by Engineer In Charge.	5.00	RMT	3,082.00	15,410.00
28	R3-CS-SS-22	Providing, detailing, and fabricating as per specifications, transporting to site and erecting M.S. ladder using hot rolled sections, hollow pipes (Hollow pipes conforming to IS 1239 part 1 and 2) including, fixtures and fastenings, cleats, stiffeners, gussets, etc. and all necessary operations like straightening, bending, cutting, drilling, grinding, machining if specified, welding, removing the welding burr, cleaning etc., fixing in cement concrete block of grade M15, and preparing surface, applying one coat of red oxide zinc chromate primer and one coat of Synthetic Enamel paint after fabrication and second coat of synthetic enamel paint after erection, with approved colour, shade and brand etc.	150.00	Kg	148.00	22,200.00

		complete as directed by Engineer In Charge.				
29	R3-CS-DD-14	Dismantling steel work in built up sections in angles, tees, flats and channels of rolling shutters, grills, gates, fencing, hoardings, including all gusset plates, bolts, nuts, cutting rivets, welding etc. including dismembering and stacking within 50metres lead.	232.00	Kg	4.00	928.00
30	R3-CS-DD-10-b	Dismantling wood work in frames, trusses, purlins and rafters up to 10 metres span and 5 metres height including stacking the material within 50 metres lead : Of sectional area size of below 40 square centimetres	19.00	RMT	14.00	266.00
	R3-CS-FL-9	Providing and laying 800 x 800 x 9 to 10 mm thk.vitrified tiles as specified below conforming to I.S.15622-2006 with water absorbtion less than 0.08% for flooring of an approved, quality, make, pattern and size for flooring including cement mortar bedding of 25 mm thick in 1:4 proportion, cutting, leveling, jointing, filling the joints by neat cement slurry or approved colour grout, curing, finishing etc complete as directed by Engineer In Charge.				
31	R3-CS-FL-9-a	Light coloured glazed vitrified tiles	21.00	Sqm	1,782.00	37,422.00
32	R3-CS-FL-9-c	Light coloured antiskid / matt vitrified tiles	2.00	Sqm	1,728.00	3,456.00
33	R3-CS-FL-26-a	Providing and fixing 9 to 10 mm thk. vitrified tiles as specified below conforming to I.S. 15622-2006 of approved quality, pattern and colour for flush/projected skirting and risers including preparing the surface and levelling in the desired line, backing of 20 thk. cement mortar in porportion 1:3, square cut top edge or chamfered top edge in cement mortar 1:3, cement float, machine cutting, leveling, jointing, filling the joints with neat cement slurry or pigments mixed with cement, finishing, curing etc complete as directed by Engineer In Charge	19.00	RMT	282.00	5,358.00

34	R3-CS-FL-62	Providing and fixing 8mm thk. vitrified tiles as specified below conforming to I.S. 15622-2006 with water absorption less than 0.08% and of approved quality, pattern and colour for dado in the wet area including preparing the surface and levelling in the desired line, backing of 20 thk. cement mortar in proportion 1:3 with approved waterproofing compound, square cut top edge or chamfered top edge in cement mortar 1:3, cement float, machine cutting, leveling, jointing, filling the joints with neat cement slurry or approved colour grout, finishing, curing etc complete as directed by Engineer In Charge. Light coloured glazed vitrified tiles/ Dark coloured glazed vitrified tiles/ Light coloured antiskid / matt vitrified tiles/ Dark coloured antiskid / matt vitrified tile	9.00	Sqm	1,626.00	14,634.00
35	R3-CS-PV-08	Providing and fixing 30mm thick factory made panel PVC door shutter consisting of frame made out of M.S. tubes of 19 gauge thickness and size of 19mm x 19mm for styles and 15x15mm for top & bottom rails. M.S. frame shall have a coat of steel primers of approved make and manufacture . M.S. frame covered with 5mm thick heat moulded PVC 'C' channel of size 30mm thickness, 70mm width out of which 50mm shall be flat and 20mm shall be tapered in 45degree angle on either side forming styles; and 5mm thick, 95mm wide PVC sheet out of which 75mm shall be flat and 20mm shall be tapered in 45 degree on the inner side to form top and bottom rail and 115mm wide PVC sheet out of which 75mm shall be flat and 20mm shall be tapered on both sides to form lock rail. Top, bottom and lock rails shall be provided either side of the panel. 10mm (5mm x 2) thick, 20mm wide cross PVC sheet to be provided as gap insert for top rail & bottom rail. panof 5mm thick both side PVC sheet to be fitted in the M.S. frame welded/ sealed to the styles & rails with 7mm (5mm+2mm) thick x 15mm wide PVC sheet beading on inner side, and joined together with solvent cement adhesive. An additional 5mm thick PVC strip of 20mm width is to be stuck on the interior side of the 'C' Channel using PVC solvent adhesive etc. complete as per Manufacturer's specification, drawing and as directed. (for W.C. and bathroom door shutter).	2.00	Sqm	1,847.00	3,694.00

36	R3-CS-HW-01-c	Providing and fixing mortise lock of approved make manufactured as per IS:2209 and 6607 and as described below for doors with necessary fixtures and materials and labour etc. complete. Chromium plated Brass mortice latch and lock with round knob	1.00	No.	1,720.00	1,720.00
37	R3-CS-HW-04-b-2	Providing and fixing Door Hinges manufactured as per relevant IS for door & windows with necessary materials and labour costs etc. complete. B] Standard brass hinges 100 mm Long	3.00	No.	90.00	270.00
38	R3-CS-WW-16-d	Providing and fixing superior quality factory made phenol bonded solid core single leaf flush commercial door shutter of thickness as mentioned below and of approved make conforming to IS: 2202 (Part I, II) with 12mm thk. teak wood lipping all around, 3mm thk. commercial veneer on external face with three coats of french polish and 150mm x 60 mm or 125 mm x 75 mm C.P. teak wood frame without fanlight including, approved fixtures and fastening hooks, eyes, screws and painting the frame and interior side with one coat of primer, putty and two coats of synthetic enamel paint of approved make and colour etc. complete as directed by Engineer in charge. 40 mm Shutter	2.00	Sqm	7,857.00	15,714.00
39	R3-CS-EW-3	Excavation for foundation, substructures, basements, tanks, sumps, walls, chambers, manholes, trenches, poles, pits & general building works in soft/ disintegrated rock, sand stone, stiff clay, gravel, cobblestone, hard laterite, water bound macadam, wet mix macadam, asphalt mix carpet of any type, pitching, soling, paths and hardcore, lime concrete, plain cement concrete, stone masonry and all types of brick/ block masonry below ground level, rock boulders, etc. for depths/ lifts upto 1.5M measured from the ground level, including dressing/ trimming the sides, leveling of bottoms, manual dewatering, removing rank vegetation, backfilling in layers not more than 200mm thickness, watering, consolidating, compacting to achieve not less than 97% Modified Proctor density conforming to relevant IS, stacking in measurable heaps for future use within owners space or disposing within an initial lead of 150m as directed, loading, unloading, leveling excluding shoring, strutting etc. complete as directed by Engineer in Charge. Note: 1) The rate includes the	30.00	Cu.M.	644.00	19,320.00

		handling/supporting the existing utilities such as cables, drains, pipes, water mains etc. 2) It also includes the royalty and other taxes if any.				
40	R3-CS-PS-208-b	Supplying, laying, jointing & testing UPVC Drainage class pipes of FoamcoreAstral(SN 8) or equivalent make in solvent cement joint including leveling with cutting the pipe to required length, roughining of pipe at wall joint including socket as directed: 200 mm pipe	5.00	RMT	1,400.00	7,000.00
41	R3-CS-PS-164-c	Providing and laying cement concrete 1:4:8 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) all-round S.W. pipes including bed concrete as per standard design : 200 mm diameter S.W. pipe	5.00	RMT	1,185.00	5,925.00
42	MSDP-BNPS-T-25	Supplying Telescopic trolley mounted aluminium frame ladders suitable for maintenatce of roadway lighting at 10M Height.	1.00	Nos	29,936.00	29,936.00
43	R3-CS-SS-04	Providing, detailing, fabricating and fixing erecting GI cold formed sections (GSM 120 Min), confirming to the physical specifications of ASTM A-607 (Grade 50) having minimum yield strength of 345 N/mm ² and as per specifications and approved fabrication drawings (which are to be prepared by Contractor and got approved from Engineer) for all heights & at all levels including transportation of the same to site, erection, provision of necessary erection bolts, fixing bolts, nuts, washers, cleats, and all necessary operations like straightening, cutting, drilling as specified, welding, cleaning, grinding and removing the welding burr etc. complete as directed by Engineer In Charge.	3.50	M.T.	86,743.00	3,03,601.00

44	BM-HIC-KST-Fair 01	(e) Layer 1 (External/Outer/Weathering sheets):Prepainted Galvalume with base material having yield strength of 250-350Mpa with Zinc / Aluminumalloy coated steel complying with AS 1397, AZ150. Top Coat: Pu primer of 5-7 microns followed by EPG coating of avg 18-20 microns in approved colour shade and Bottom Coat: PU/Poleyster primer of 5 microns followed by avg 5 microns in Mill grey. The profile shall be Snap lock system of 46mm nominal depth , 474- 550mm covered width with specially designed interlocking at side laps including gutter drain joint at every side laps when overlapped that makes adoption of shape possible for slope upto 0.4% without leakage or minimum depth of the profile shall be 66mm. The sheets shall be fixed to spacer sections with special reinforced acetylate , anti friction , anti static , di- electric and totally non metallic clips made for the profile to lock into the clip crevices , permitting anti abrasive , free movement during the process of thermal expansion without in any manner permitting the metal to stress and keeping the integrity of the installation intact or with double clip.i.e splicer in thickness of 1 – 1.2mm and connecting clips preferably in stainless steel in thickness of 0.30-0.50mm connecting with sheets . Connecting stainless steel clip shall be fixed with splicer having special slots for allowing sheets to move freely to cater thermal movement.The prices shall be inclusive of all taxes, freight , tools and tackles , loading, unloading etc. Payment shall be made on “as laid “ basis for sheets. (CRIL, Nexus Infratech, TataBluescope, Kirby, Surabhi Roofing).	1,914.00	SqM	3,863.00	73,93,782.00
45	R3-CS-RW-09-a	Bare Galvalume/zincalume sheets for roofing	- 1,914.00	Sqm	667.00	-12,76,638.00
46	R3-CS-RW-12-c	Supplying, fabricating, transporting to site and erecting 3.12mm thick MS gutter with all necessary supporting arrangement laid to proper slope, at all heights and levels, including surface cleaning, Grinding and removing the welding burr and applying one coats of red oxide zinc chromate primer and two coats of synthetic enamel paint on underside before erection & one coat of rubberized waterproof paint on upper side after erecting including making necessary connections with rain	200.00	RMT	1741.00	3,48,200.00

		water pipes etc complete as directed. Girth from 801 to 1000mm				
47	R3-CS-AW-15-a	Providing and fixing anodized (anodic film must not be less than 15 microns i.e. AC-15 as per IS, the anodising must be scaleted by keeping the anodized section in boiling de anodized water for a period of one hour) aluminum fixed/ sliding / pivoted / top hung / side hung / louvered type windows, doors, ventilators and partitions conforming to IS:1948, 1961 with hollow bottom section & standard single / two / three / four track frame section all round (top, bottom and sides) with shutter frame made up of standard handle section standard interlocking section and standard top and bottom section with infill panel of plain / frosted / tinted glass/ Novapan sheet / acrylic sheet / hardner laminated sheet as listed below with nylon guides, gliders glass fixing PVC weather strips, neoprene gasket, PVC weep holes etc complete with approved type of locking arrangement, handles and other fixtures including fixing, filling the gaps with silicon sealant, cleaning polishing the aluminium section with petrol and / or other agents as specified by the manufacturers etc. complete as directed by Engineer In Charge. Aluminum section used Providing & Fixing 2.0 mm Th. Aluminium gutter with bottom joining plate.	647.00	Kg	1,170.00	7,56,990.00
48	R3-HE-12-2-b	Providing & applying 100% solids, flexible, elastomeric, UV stable, 2 component, water proof, fast setting (Within 45 seconds), specific grade Nukote ST Standard Pure Polyurea or equivalent, on steel pipes forming a seamless & monolithic membrane over the compatible recommended primer. The coating should be tested & conform to 21 CFR 175 300. The coating shall be carried out in a single application with multiple passes using high pressure plural component reactor strictly as per manufactures specifications including all necessary tools, tackles, high pressure spray machine, primer application, surface preparation. application to be carried out by Qualified Applicator certified by the principal. 1.5 mm DFT on the internal surfaces	120.00	Sqm	3,688.00	4,42,560.00
49	R3-CS-RW-09-c	Colour Coated Galvalume/zincalume Flashings and Cappings 600mm wide	200.00	RMT	443.00	88,600.00
50	R3-CS-RW-09-d	Colour Coated Galvalume/Zincalume ridge.	31.00	RMT	589.00	18,259.00

51	R3-CS-RW-09-e	Colour Coated Galvalume/Zincalume Barge Board	106.00	RMT	510.00	54,060.00
52	R3-CS-RW-10	Removing Existing Mangalore tiles / AC / GI / Galvalume Sheets/polycarbonate plain and corrugated sheets from roof / cladding / partitions etc., excluding supporting structure but including scaffolding, handling, transporting, sorting and stacking at site lead up to 150m and or disposing etc complete as directed.	200.00	RMT	127.00	25,400.00
53	R3-CS-PS-215-c	Supplying & Fixing 3 mm thick lead flashing in single piece of lead sheet all around the rain water outlet mouth on a layer of cold bitmen including heavy duty 5 mm thick C.I. grating, c) 300 x 300 (12" x 12") square or dia outlet for 200 mm (8") pipe	27.00	No.	674.00	18,198.00
54	R3-CS-RW-16-d	Providing and fixing UV resistant selffit UPVC pipes of approved make for Rainwater downtakes confirming to IS 13592:1992 Type A suitable for 4kg/sqcm pressure for following pipe diameters including rain water receiving recess with pvc plug bend necessary fittings such as offsets shoes, fixing the pipes on wall with clips filling the joints with solvent/cement and necessary scaffolding etc. complete as directed by Engineer In Charge. 200 mm dia. pipe	318.00	RMT	410.00	1,30,380.00
55	R3-CS-RM-127	Providing & fixing FULL HEIGHT FULLY GLAZED PARTITION at required location having height approx.2.80 meter by using 10 mm thick toughened float glass fixed in 50 mm x 100 mm approved quality seasoned T.W. section at top & bottom rail with necessary lipping (BTC) moulding & fixtures etc.complete. Antitermite treatment to woodwork,door frame & melamine polish to all woodwork including all leads & lifts etc complete as per architects Drawing and instructions of Engineer In Charge.	13.00	Sqm	5,531.00	71,903.00
56	C4-09-04-02-FA-141Q	Providing & fixing of life size statues of saint or people of maharashtra made of fibreglass from the claywork, painting with primer base coat, grey aster spray paint and duco paint and installation as directed by by Architect / Engineer-in-Charge. Skilled Artists and Artisans used for this work	1.00	No.	2,12,315.00	2,12,315.00

57	R3-CS-SS-12	Providing and fixing 750mm dia concertina barbed razeer type coil of 19mm wide ribbon with thickness 5 SWG and central core wire of 12 SWG with anti rust coating, supported over 5 rows of barbed wires of 14 SWG having two ply four points at 75 mm c/c, fixed to Y shape angle bracket placed at 2.5m c/c (leg of Y should be 0.51 m long and 0.23 m embedded in concrete, wing of Y should be 0.475 m long having a distance of 0.58 m between the two wing on the top) made up of 50mm x 6 mm M.S. angle embedded in cement concrete bed block of size 300mm x 300mm x 300mm. The concertina coil should be fixed to angle with M.S. Flat 25mm x 5mm thick on both the sides as runner all steel work shall be applied with one coat of red oxide zinc chromate primer and two coat of Synthetic Enamel paint etc. complete as directed by Engineer In Charge.	175.00	RMT	579.00	1,01,325.00
58	R3-CS-FL-46-c	Providing and constructing raised platform of 750 mm wide and 600 to 750mm high using minimum 40mm thick polished kadappa stone slab base with minimum 15mm thk. polished stone top as specified below of approved quality, colour and texture, supported by both side polished, 40mm thk. and minimum 700mm wide kadappa spaced at not more than 1200mm clear, including polished facia of min. 100mm height as specified below with champhered/ rounded at the top edges, jointing in approved adhesives, machine cutting, making opening for sink and fixing the same in position, leveling, smooth cement plastering along the sides to match the existing surface in cement mortar, filling the joints with pigment mixed with cement, cleaning, finishing, curing etc complete as directed by Engineer In Charge. (The cost of providing the sink shall be paid extra as per plumbing items) Ruby red / jet black / Hasan green Granite slab at top and facia	8.00	RMT	5,127.00	41,016.00
59	CE4-21-020-FA12	Designing, engineering, supply, installation and testing of teflon architectural membrane fabric,	507.00	Sqm	2,232.00	11,31,624.00

60	CE-16-ABSA-037	Providing & fixing of synthetic washable carpet of 1000 gsm loop pile woolen / nylon carpet with 8mm thk ,of approved make and sahde , to be fixed on the floor with underlay on floor area of frontpassage , gangways between chairs etc and to be fixed properly after necessary levelling usingcorrect adhesive for fixing of carpet as per manufacture specifications ,all as per deisgn approvedby architect & consutlant. Basic prcie of carpet - rs. 1200 smt.	139.00	Sqm	1,993.00	2,77,027.00
61	R3-CS-DD-51	Dismantling aluminium/ Gypsum partitions, doors, windows, fixed glazing and false ceiling including disposal of unserviceable surplus material and stacking of serviceable material with in 50 meters lead as directed by Engineer-in-charge.	284.00	Sqm	42.00	11,928.00
62	CE-16-ABSA-021	Providing & fixing wall, ceiling panels– 600 x 600 x 15 thk microfibre black matt Panels screwed tog. I. Frame with screws @ 200 c/c, and 10mm groove between tiles In both directions. Frame – g.iframe fabricated with 80x26x0.5 ceiling section at 300 c/c, 20x27x30x0.5 perimeter channel asrequired, 15x45x0.9 intermediate channel At 1220 c/c, 25x10x0.55 ceiling angle at 1220 c/c, securely fixed to structural Soffit hangers at 1220 c/c, last ceiling angle not more then 610 from adjacent wall, Connecting clips etc. As required. Complete as per manufacturer's Specifications joints – alljoints, grooves and tiles in the ceiling & wall must be Imperfect line and level. All junctions of four panels must by perfect '+' in line And level. Three coats of matt black paint colour asapproved by acoustic consultant Including 50 mm thk micron, of 1000gsm density in between g.i frame& including Scaffolding. Complete as per design,	325.00	Sqm	4,216.00	13,70,200.00

63	CE-16-ABSA-020	Gypsum board ceiling with insulation: providing and fixing panels – 12.5mm thk india gypsum plain tapered edge gypsum panels, screwed to g.i. Frame @ 200mm c/c. Frame – g.i frame fabricated with 80x26x0.5 ceiling sections at 300 c/c, 20x27x30x0.5 perimeter channel as required, 15x45x0.9 intermediate channel at 1220 c/c, 25x10x0.55 ceiling angle at 1220 c/c, securely fixed to structural so fit hangers at 1220 c/c, last ceiling angle not more than 610 from adjacent wall, connecting clip setc. As required. Complete as per manufacturer's specifications. joints - all joints of panels filled and finished with india gypsum jointing compound, jointing tapes etc. Complete. including 50 mm thk micron of ,1000 gsm density in between g.i frame & scaffolding. Entire frame/micron shall be covered welded mesh of g.i 19 mm x 19 mm square of 14 gauge. Complete as per design, drawings and acoustic consultants instruction.	140.00	Sqm	1,350.00	1,89,000.00
64	R3-CS-WW-07	Extra for providing and fixing 3mm thk. veneer with three coats of french polishing instead of synthetic enamel painting including all material and labour.	55.00	Sqm	932.00	51,260.00
65	CE6-09-005-FA114	Providing and Fixing Gypsum board false ceiling system {India Gypsum or approved equivalent} using 12.5mm gypsum plaster Board screwed on G.I. Metal frame work. The frame work to be made of perimeter channels of 20x30x27 mm fixed on the wall and ceiling section of 80x26x.556 mm as a cross member provided at 456 mm c/c and the intermediate channel of 15x15x0.9 mm as main runner at 1220 mm c/c suspended by means of G.I. angle 25x25x.556 mm from the existing ceiling by means of approved G.I. Anchor fastener (Fischer, Hilti, or approved equivalent make) 12.5 mm dia x 35 mm with 6mm dia bolts screw at 1220 mm c/c. The joints of Gypsum board to be strapped and sealed with jointing compound. Including making of cut-outs for light fittings, fire sprinklers etc. complete.	275.00	Sqm	1,071.00	2,94,525.00

66	CE-16-ABSA-022	P & f wood wool board ceiling covered with fabric as per dwg. & spec.: 1200 x600x15 natural sound smooth screwed wood wool board to g.i. Frame with screws @ 200 c/c. Frame - g.i. Frame fabricated with t.w. Spacers at 610 c/c vertically as per profile of panelling in dwg. 50x37.5x0.5 floor & ceiling channel at top and bottom edges, 50x37.5x0.5 stud section at 610 c/c vertically, 80 x 26 x0.5 ceiling section at 400 c/c horiz. Complete as per manufacturers specific. Incl.50 mm thk, 1000gsm density micron in between g.i frame with welded mesh of g.i 12mm x 12mm square of 24 gauge. Woodwool board to be finished with 75 x 12mm thk commercial ply putty at 1200mm/c in both directions and 12mm thk foam and cladded with fabric or approved joints - all joints, and panels in the panelling must be in perfect line and level, all junctions of panels must be perfect line & level. joint locations and '+' shall not be visible in finish work. (basic rate of fabric 750/-sq.mt)	75.00	Sqm	3,551.00	2,66,325.00
67	R3-CS-DD-5-b	Demolishing stone rubble masonry manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge :In cement mortar	6.00	Cum	1,797.00	10,782.00
68	R3-CS-SS-16	Providing, detailing, and fabricating as per specifications, transporting to site and erecting MS Openable / Sliding / Ornamental Entrance Gates including track and wheel, locking arrangement, fixing bolts, nuts, washers, cleats, stiffeners, gussets decorative balusters, arrow heads etc. and all necessary operations like straightening, bending, cutting, drilling, grinding, machining if specified, welding etc. complete weighing 60 to 65 kg/Sqm, including cleaning, Grinding and removing the welding burr and preparing surface and applying one coat of red oxide zinc chromate primer and one coat of Synthetic Enamel paint after fabrication and second coat of Synthetic Enamel paint after erection, with approved colour, shade and brand etc. including touching up with primer etc. complete as directed by Engineer In Charge.	16.00	Sqm	9,819.00	1,57,104.00

69	R3-CS-CW-3-a-1	Providing and laying in position ready mixed plain cement concrete, with cement content as per approved design mix by Engineer-in-charge and manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for plain cement concrete work, including pumping of R.M.C. from transit mixer to site of laying and curing, including the cost of centering, shuttering and finishing, including cost of curing, 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 the Engineer - in - charge. All works upto plinth level. M-20 grade plain cement concrete (cement content considered @ 260 kg/cum a	9.00	Cum	6,432.00	57,888.00
70	R3-CS-CW-62	Providing & Laying Plum concrete consisting of 80% P.C.C. mix (1:3:6) and 20% Rubble stone of maximum size of 150 mm laid in layers with ramming consolidating, watering including dewatering cost, seigniorage & conveyance of all materials, labour charges, machine mixing, finishing the surface etc. complete	19.00	Cum	6,785.00	1,28,915.00
71	R3-CS-EW-26	Providing & Laying dry stone Rubble Soling with average 230 mm size hard stone set in regular lines, handpacked and interstices thoroughly filled with small chips including filling in with good quality murum brought from outside, compacting with iron rammers, watering, sand spreading 12mm thk. layer of grit on top etc complete as directed by Engineer In Charge. (Note: The rate includes the royalty and other taxes if any)	5.00	Cum	2,434.00	12,170.00
72	R3-CS-CW-1-b	Providing and laying in position plain cement concrete of specified grade cement with trap/granite/quartzite/gneiss metal mixing in concrete mixer including bailing out water, compacting, finishing surface, curing and including the cost of centering and shuttering at all level : Nominal Mix of 1:2:4 (1 cement OPC: 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	3.00	Cum	7,232.00	21,696.00

	R3-CS-CW-7	Providing and laying in position ready mixed design mix M-20 grade cement concrete for reinforced cement concrete work, 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 specifications shall be got approved by Engineer-in-Charge before execution of the item. The rate shall include cost of all specified materials and operations at all levels and heights, including the cost of centering, shuttering and and excluding reinforcement which shall be paid under relevant item.				
	R3-CS-CW-7	(Note :- Cement content considered in this item is @ 300 kg/cum as per IS 456 table showing minimum cement content. No extra will be paid nor any amount will recovered on account of variation of cement in mix design as per specifications for controlled concrete). All works (including Centering & Shuttering)				
73	R3-CS-CW-7-a	Foundations, footings, bases of columns, rafts, pilecap	5.00	Cum	7,056.00	35,280.00
74	R3-CS-CW-7-b	Walls (any thickness) including attached butteresses, retaining wall, shear wall, diaphragm wall , trench, pit walls, etc	3.00	Cum	10,793.00	32,379.00
75	R3-CS-CW-17	Extra and over for providing richer RMC of M-30 grade cement concrete instead of M20 (Note :- Cement content considered in this item is @ 340 kg/cum as per IS 456 table showing minimum cement content.)	8.00	Cum	780.00	6,240.00
76	R3-CS-CW-35-c	Providing and fixing in position steel bars reinforcement of various diameters for R.C.C. pile, pile caps, footings, raft, retaining wall, shear wall, lift wall, foundations, slabs, beams, columns, canopies, staircases, newels, chajjas, lintels, pardies, coping, fins, arches, etc. as per detailed designs, drawings and bar bending schedules, including straightening, cutting, bending, hooking the bars, binding with wires or tack welding, supporting as required etc. all complete at all levels. Thermo-Mechanically Treated steel bars. (Fe 500 D)	1.00	M. T.	80,080.00	80,080.00

77	R3-CS-WP-33	Providing waterproofing treatment from outside to basement lift-pits and other under ground structures during construction. The treatment shall be started after the P.C.C. bedding for the base slab or raft slab is laid. On the P.C.C. bedding a waterproofing layer based on cement with rough shahabad stones of 20 to 25 mm thick well pointed in the joints with 1:3 C.S. 40 mm thick for floors and 20 mm thick for sides with cement float and water proofing compound as per specifications shall be laid. Then the surface shall be superimposed by regular R.C.C. raft or base slab as per design. After completion of the raft / base slab and side walls the treatment of waterproofing layer shall be continued along the outer surface of the walls upto a height of 30 cm above the adjacent ground level. (The excavation of the side around the walls shall be filled with soft earth by the contractor). The total thickness of the treatment shall be 65 mm to 75 mm for floors and 32 mm to 38 mm for walls.	29.00	Sqm	1,601.00	46,429.00
					Grand Total	1,72,17,906.00

MEP WORK

BRIHANMUMBAI MUNICIPAL CORPORATION						
Sub:-Proposed works to be carried out at Annabhau Sathe Auditorium in campus of V.J.B.Udyan , Byculla in 'E'Ward on the land bearing CTS No.563(pt).Mazgoan Division in 'E' Ward .						
M&E Estimate		Bill of Quantity				
Sr.	Item No.	Description	Qty	Unit	Rate	Total Amount
I	STAGE FLOORING & SOUND PIT WORK					
						Excluding GST& VAT
1	R3-ME-6-7-e	Supply &Installation of 'C' Class 40mm G.I. PIPE (I.S.I Mark) for Wings Bar of 45 ft length to be suspended from Manual /Eletrical Mechanisum Qty 5 Nos (RB-1)	70.00	Mtr.	638	44,660.00
2	CE-16-ABSA-VJU-222	Supply,Installation of Fire retardant velvette2 fabric with lining,100% gathering for House curtain centre parting as per theapprovedpatern and colour,duly stitched with eyelets (finished size after stitched 13M x 5.7 M per halve)Refer supporting leaflet andtechnical specifications No-42.	395.00	Sqm	3,309.00	13,07,055
3	CE-16-ABSA- VJU-201	Supply, Installation, Testing and Commissioning of Well designed and engineered self climbing motorised teleclimber hoists (FTCs,WTCs) with compact gear box, 0.75HP, 440V, 1000 RPM motor with DC brake, extreme end limit controllers, necessary electro mechanical devices,4nos 16amps 1 way CEE sockets, 1no 10 A 4 way IEC sockets and 2 nos.DMX sockets, cable retractor with necessary power and control cables and 3mtr long 40NB MS class B pipe (For lighting from wingside) provided with pair of suitable ladder (WTCs) at +7.5 m level, as per supporting leaflet and technical specifications.Refer supporting leaflet and technical specifications No-28. (RB-1+3)	5.00	Nos	1,29,470.00	6,47,350
4	R3-ME-1-31-c	50 x 50 x 6 mm of M.S.angle. (Supporting material for fixing bars)	115.00	Mtr	639	73,485.00
5	CE-16-ABSA- VJU-208	Supply,Installation, Testing and commissioning of Motorised Housecurtain track system (HC) fixing arrangement 24M at 5.75M, straightshape centre parting powder coated (60 microns) with mounting arrangement at +8 m level , provided with the following.Heavy dutyaluminium track, powder coated Track mounting brackets mechanicaldrive unit 0.75HP, 24V, DC moter specially designed	1.00	Nos	2,94,903.00	2,94,903.00

		compact gearbox Ø5 GI wire ropes Curtain holding trollies (110nos.prox.) Diverter and routing pulleys (75Dia.Approx.) Open and closelimit controller Motor cable termination box Refer supporting leaflet and technical specifications No-35.(RB-7)				
6	CE-16-ABSA- VJU-225	Supply Installation of Fire retardant cotton2 fabric blue for frill(FB1) 50% gathering as per the approved patern and colour, duly stitched with eyelets. (finished size after stitched 8 M x 1.5 M per set) as per technical specifications.Refer supporting leaflet andtechnical specifications No-43.(RB-8)	114.00	Sqm	2,445.00	2,78,730.00
7	CE-16-ABSA VJU-226	Supply Installation of Fire retardant cotton2 fabric blue for frill(FB2) 50% gathering as per the approved patern and colour, dulystitched with eyelets. (finished size after stitched 18 M x 1.5 Mper set) as per technical specifications.Refer supporting leaflet andtechnical specifications No-43.(Item Sr.9)	21.00	Sqm	2,445.00	51,345.00
8	R3-ME-1-15-c	IP43 16 Way SPN DB (4 + 12Way)	1.00	Nos	3741	3,741.00
9	R3-ME-1-17-c	16A/20A SP MCB	5.00	Nos	332	1,660.00
10	R3-ME-1-17-r	32A TPN MCB	2.00	Nos	1941	3,882.00
11	R3-ME-1-19-a	16/32 Amp. DP MCB	2.00	Nos	3049	6,098.00
12	R3-ME-1-20-a	50mm x 50mm x 50mm size GI Junction box with kNosck out & 10Amp. Connector block /strip	5.00	Nos	129	645.00
13	R3-ME-1-25-k	ELCB with 30mA Sensitivity 40Amp. 4Pole	2.00	Nos	5485	10,970.00
14	R3-ME-2-3-u	1st category Cu armoured cables FRLS outer sheathed- 4C x 16 Sq.mm	75.00	Mtr	918	68,850.00
15	R3-ME-2-3-g	1st category Cu armoured cables FRLS outer sheathed- 4C x 2.5 Sq.mm	350.00	Mtr	178	62,300.00
16	R3-ME-3-4-b	Wiring for submains- steel conduit- 2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire in 20mm Conduit	75.00	Mtr	174	13,050.00
17	R3-ME-3-29-a	Light /Fan / Ex. fan Points	15.00	Each Pt.	1302	19,530.00
18	R3-ME-3-29-j	5A/6A - 3/5 Pin Plug On Board	3.00	Each Pt.	127	381.00
19	R3-ME-7-1-d	600 X 600 X 3.15 mm Copper Plate, 3000mm dip with suitable size cu strip earth pit as per IS 3043. The earth pit shall be provided with watering pipe (Class B) with wire messed funnel, 25X3 cu strip / 2X8SWG Cu.wire up to chamber, disconnecting links with 600 x 600 mm (clear) RCC chamber & 3mm thick heavy duty CI chequered plate cover with hinge. Bentonite shall be provided for	3.00	Nos	24427	73,281.00

		earth pits. Excavation, back filling, removal of excess soil is included in the scope				
20	R3-ME-12-4-b	Cat 6 Gigabyte	1,000.00	Mtr	34	34,000.00
21	R3-ME-12-4-e	RG 11	150.00	Mtr	32	4,800.00
22	R3-ME-12-10-f	Speaker wiring using 40/36 cable with PVC conduit	150.00	Mtr	107	16,050.00
23	CE-16-ABSA-VJU-204	Supply, installation testing and commissioning of DMXmale/female/termination connectors. Refer supporting leaflet and technical specifications No-31.	32.00	Nos	503.00	16,096.00
24	CE-16-ABSA-VJU-205	Supply, installation testing and commissioning of DMX Termination plug. Refer supporting leaflet and technical specifications No-31.	32.00	Nos	503.00	16,096.00
25	CE5-13-027-FA73	Supply, installation testing and commissioning of PVC unarmoured copper cable 1.1KV grade confirming to IS1544 size 7core x 1.5 sq	50.00	Mtr	254.00	12,700.00
26	CE5-13-027-FA75	Supply, installation testing and commissioning of 5core DMX signal cable for DMX network.	100.00	Mtr	289.00	28,900.00
27	CE-16-ABSA-VJU-199	Supply, Installation, Testing and Commissioning well engineered of Motorised lighting bar of length 10 mtrs hunged at 7.5 mtre level max.made using MS 40NB class B class dual barrel pipe,powder coated 60 microns black matt finish with proper chemical treatment and methodology.Having 10 nos 16 A 1 way CEE sockets for hot lights and 2 nos 8 A 4 way IEC sockets for cool lights and 2 nos. DMX socketson 150 wide cable trays and lids (LB1) Necessary pulley and guide pulleys Ø5 GI wire ropes with winding drum Specially designed compact gear box 3phase AC motor with DC Brake 1.5HP, Upper and lower limit controller Power and signal cables from marselling box to the sockets through cable retractors. Alumimium cable retractors of size 100mm x 40mm approx. of required length including built in cables. Motor cable termination box. Refer supporting leaflet and technical specifications No-27.(Pt.2)	1.00	Nos	3,81,215.00	3,81,215.00

28	CE-16-ABSA-VJU-219	Supply, Installation, Testing and commissioning of Compact wall mount 3feeder (MCCP-3) motor control centre panel arrangement made out of 2 mm thick CRCA sheet with necessary mounting frame to control the motorised lighting bars , powder coated 60 microns black matt finish with proper chemical treatment and methodology. Including 1 No.16A TPN MCB, 3 Nos. feeders consisting fuses, contactors, overload relays, emergency tripping system, step down transformer, cu. busbars, indicating lamps, completely wired, clip on type terminals with mounting accessories, terminal marking labels, required brass cable glands, neoprene dust and verminproof rubber gaskets, bolted inspection cover, name plates, MS hardware duly zinc plated etc. Refer supporting leaflet and technical specifications No-41.(Pt.2)	1.00	Nos	20,140.00	20,140.00
29	CE-16-ABSA-VJU-231	Supply, Installation, Testing and Commissioning of 1000W spun aluminium PAR with floating G16d base lamp socket, min. 3mtrs power 16A CEE cord and filter frame but without lamp as per supporting leaflet and technical specifications. Refer supporting leaflet and technical specifications No-46.(Pt.2)	5.00	Nos	4,459.00	22,295.00
30	CE-16-ABSA-VJU-232	Supply, Installation, Testing and Commissioning of 1000W halogen Fresnel spot light with 10 dia German lens, Gx9.5 base lamp socket, min. 3mtrs power cord with 16amps 3 pin CEE plug and normal yoke but without lamp and accessories as per supporting leaflet and technical specifications. Refer supporting leaflet and technical specifications No-46.	5.00	Nos	18,413.00	92,065.00
31	CE-16-ABSA-VJU-282	Supply, Erection, Testing & Commissioning of Speaker Cable Crystal Make as per specifications complete.	150.00	Mtr	374.00	56,100.00
32	CE-16-ABSA-VJU-257	Supply, Erection, Testing & Commissioning of Sub woofer speaker JBL-VRX915S as per specifications complete.	2.00	Nos	1,69,702.00	3,39,404.00
33	CE-16-ABSA-VJU-258	Supply, Erection, Testing & Commissioning of Stage Monitor Speaker JBL-VRX-915M as per specifications complete.(Pt.20)	4.00	Nos	1,48,169.00	5,92,676.00
34	CE-16-ABSA-VJU-286	Supply & Erection Various cable connector (MX connector, XLR female plate mount Etc on stage), Cable tie, Heat shrink sleeve for above equipment For Control	1.00	LOT	93,207.00	93,207.00

		Room as per specifications complete				
35	CE-16-ABSA- VJU-287	Integrating of entire Audio reinforcement system with each other alongwith calibration with proper audio-electronic earthing as perspecifications complete.	1.00	JOB	2,63,980.00	2,63,980.00
36	CE-16-ABSA- VJU-281	Supply, Erection, Testing & Commissioning of Microphone Cable CrystalMake as per specifications complete.	30.00	MTR	400.00	12,000.00
37	CE-16-ABSA- VJU-241	Supply, Installation 1.5mtr long safety bond with lock clip.Refersupporting leaflet and technical specifications No-46.	5.00	NOS	461.00	2,305.00
38	CE-16-ABSA- VJU-240	Supply, Installation Diecast aluminium C clamp with safety pin.Refersupporting leaflet and technical specifications No-46	5.00	NOS	1,079.00	5,395.00
39	CE-16-ABSA-VJU-204	Supply, installation testing and commissioning of DMXmale/female/termination connectors. Refer supporting leaflet andtechnical specifications No-31	24.00	NOS	503.00	12,072.00
40	CE-16-ABSA-VJU-205	Supply, installation testing and commissioning of DMX Terminationplug.Refer supporting leaflet and technical specifications No-31	24.00	NOS	503.00	12,072.00
41	CE5-13-027-FA76	co-axial cable	103.00	MTR	77.00	7,931.00
42	CE-16-ABSA-VJU-193	Supply, Installation, Testing and Commissioning of Grid mount photoisolator DMX splitter unit 1 DMX input and 8 isolatedoutput.Refersupporting leaflet and technical specifications No-20.	2.00	NOS	40,279.00	80,558.00
43	CE-16-ABSAVJU-189	Supply, Installation, Testing and Commissioning of MS 1 way power andcontrol junction box (PCJB), made out of 1.5 mm thick CRCA sheet alongwith fixing arrangement, powder coated 60 microns black matt finish with proper chemical treatment and methodology. Including clipon type terminals with mounting accessories, terminal marking lables,required brass cable glands, neoprine dust and verminproof rubber gaskets, bolted inspection cover, name plates, MS hardware dulyzinc plated etc.Refer supporting leaflet and technical specificationsNo-17	5.00	NOS	1,439.00	7,195.00

44	CE-16-ABSAVJU-186	Supply, Installation, Testing and Commissioning of MS 1 way general lighting power junction box (GLJB), made out of 1.5 mm thick CRCA sheet along with fixing arrangement, powder coated 60 microns black matt finish with proper chemical treatment and methodology. Including 1 No. IEC socket, 1 No. 2 x 55 W flicker free light, clip on type terminals with mounting accessories, terminal marking labels, required brass cable glands, neoprene dust and verminproof rubber gaskets, bolted inspection cover, name plates, MS hardware duly zinc plated etc. Refer supporting leaflet and technical specifications No-14.	1.00	NOS	11,679.00	11,679.00
45	CE-16-ABSAVJU-184	Supply, Installation, Testing and Commissioning of MS DMX output/ input junction box (DMX-WB), made out of 1.5 mm thick CRCA sheet along with fixing arrangement, powder coated 60 microns black matt finish with proper chemical treatment and methodology. Including 1 No. DMX 5 pin XLR male socket, 3 Nos. female sockets and loop cord with mounting accessories, required brass cable glands, neoprene dust and verminproof rubber gaskets, bolted inspection cover, name plates, MS hardware duly zinc plated etc. Refer supporting leaflet and technical specifications No-13.	3.00	NOS	2,734.00	8,202.00
46	R3-ME-2-15-e	G.I. Trunking / Duct / Raceway & all other accessories – 300 x 40mm (W x H) - (14 SWG – 2mm) with cover without partition	15.00	MTR	1,024	15,360.00
47	R3-ME-2-15-d	G.I. Trunking / Duct / Raceway & all other accessories – 150 x 40mm (W x H) - (14 SWG - 2mm) with cover without partition	17.00	MTR	597	10,149.00
II		OTHER WORK				
48	CE-16-ABSA-VJU-155	SITC of 32 TFT LCD monitor for viewing CCTV with VGA Port and extra VGA Cable	4.00	Nos	28,916.00	1,15,664.00
49	R3-ME-12-13-M	SITC of IP Dome camera with 1/2.8 in. CMOS, Progressive Scan, HD 720P Horizontal Resolution, Dual H.264 streaming, 25 FPS, 2.8mm-10mm varifocal auto iris lens, 0.01 lux, Tamper detection, Wide dynamic Range, 3D Noise reduction, PoE & standard 12VDC/24VAC power input, Indoor surface mount enclosure, Mounted on True Ceiling / False ceiling as per site requirement (including required accessories), UL Listed Or	4.00	NOS	37,981	1,51,924.00

		Equivalent. Camera Shall be ONVIF compliant				
50	R3-ME-12-13-N	SITC of IP Fixed Box/ Bullet camera with 1/2.8 in. CMOS, ProgressiveScan, Day/Night, HD720P Horizontal Resolution , Dual H.264 streaming,25 FPS, 2.8mm-10mm varifocal auto iris IR corrected megapixel lens, 0.05 lux Day/Night, Tamper detection, Wide dynamic Range, 3DNoise reduction, PoE & standard 12VDC/24VAC power input, IP66 ratedvandal resistant enclosure, UL Listed Or Equivalent. Camera Shall be ONVIF compliant.	4.00	NOS	37,981	1,51,924.00
51	R2-ME-12-13-P	Design, Supply, testing, installation and commissioning of modular 16channel 1080P NVR, Recording: 1920X1080P, 15 FPS, 30 days recording, 24hours/day; Real time monitoring with 25 FPS. Hard disc : 8 SATA III Ports, Each 6TB , up to 48TB, 1 eSATA port, Disk array:Support RAID 0/1/5/6/10, Two no's of RJ -45 10/100/1000 Mbps selfadaptive Ethernet interface, RS 232, RS 485,keyboard interfaces, VGA/HDMI compatible, 2nos front USB 2.0 & 1 no at rear USB 2.0compatible & etc. As per storage configuration contractor shallconsider the separate hard discs (To be connected to Existing system)	1.00	NOS	93,911.00	93,911.00
52	R3-ME-9-2-b	Nominal Capacity 1.5 TR (4500 Kcal / Hr. (1 indoor unit of 1.5 TR & 1 outdoor unit of 1.5 TR)	1.00	NOS	61,794	61,794.00
53	R3-ME-9-2-f	Providing & fixing of Boxing to cover refrigeration piping, cabling etc.	10.00	Mtr	422	4,220.00
54	R3-ME-9-2-g	Providing & fixing of platform and M.S. Railing for Outdoor units of Split AC to facilitate smooth access to technician to safely carry out maintenance .	1.00	Job	12,668	12,668.00
55	R3-ME-9-2-j	Providing & fixing of Refrigerant piping including electrical cabling & earthing as per specification.	5.00	MTR	1,760	8,800.00
56	R3-ME-9-2-k	Providing & fixing of Drain piping as per specification	5.00	MTR	296	1,480.00
57	R3-ME-4-34-d	LED Spot Light	10.00	NOS	919	9,190.00
58	R3-ME-4-34-f	LED flexible strip light 2 wire min of 4.8W	26.00	Nos	825	21,450.00
59	R3-ME-4-34-a	LED Tubelight fixtures 1X 18W	5.00	NOS	456	2,280.00
60	R3-ME-4-12-g	Exhaust fan of 150mm sweep, 1400RPM, AC, 230V , 50 Hz, single phase complete with all necessary accessories for completing installation	1.00	NOS	1,335	1,335.00

61	R3-ME-4-12-d	Ceiling fan of 1200 mm sweep with all accessories including Electronic Regulator for completing installation	1.00	NOS	2,094	2,094.00
62	R3-ME-4-12-s	Fan safety rope/ Fan wire.	1.00	NOS	326	326.00
63	R3-ME-4-26-e	20W LED Flood Light Luminaire IP65 - Integral type multipurpose utility lighting with mounting bracket and could be ceiling & wall mounted. Designed to be Energy Saver, Dust proof, Weatherproof and Toughened glass against vandalism. The housing comprises of Aluminum die cast LM6 aluminum alloy body wired with Electronic driver and 1 watt high powered LED with pre-focussed lens at various degrees. A clear Toughened glass is sealed to the Aluminum die cast LM6 aluminum alloy frame and to the housing with silicon rubber gasket.	5.00	NOS	2,579	12,895.00
64	CE16-MHO-DLFAIR4	SITC of LED RGBW approx.50W Flood Light with aluminum die cast housingbody. Weather proof IP66/IP65 addressable DMX control with lead cable arrangement with various beam angle provision, having adjustable mounting bracket arrangement	10.00	NOS	40,936.00	4,09,360.00
65	CE16-MHO-DLFAIR7	SITC of approx.36 W Mini LED RGBW Flood Light with aluminum die casthousing body. Weather proof IP66/IP65 addressable DMX control withlead cable arrangement with various beam angle provision ,having adjustable mounting bracket arrangement	20.00	NOS	51,633.00	10,32,660.00
66	CE16-MHO-DLFAIR8	SITC of Ethernet or DMX Switch or DMX splitter having 5 channels suitable for outdoor or indoor installation with suitable networkcable and power source. Best location selected by contractor tooptimised signal strength.	2.00	NOS	16,456.00	32,912.00
67	CE16-MHO-DLFAIR10	SITC of Providing Software to create & manage dynamic light showswithfully customizable effects etc.Multi-layer editing, and uniquecolor palettes.Design shows with single or multiple color-changing effects, animated images, geometric patterns, Configure and controlmultiple playback zones,each with up to unique light show assignments	1.00	NOS	4,11,415.00	4,11,415.00
68	CE4-12-13-DF-018	S/I/T/C of 12 WAY TPN Lighting Distribution Board. (LDB) - Normal, asper DSR Nos.1x(5-6-5) +36x(5-3-2) +(5-4-12)& Technical specifications	1.00	NOS	14,540.00	14,540.00
69	R3-ME-2-3-b	1st category Cu armoured cables FRLS outer sheathed- 3C x 1.5 Sq.mm	279.00	Mtr	104	29,016.00

70	R1-HBTMC/VIS/FA-3	Supply, Installation, Testing & Commissioning of Projection system ; 6,000-lumen brightness, Full HDWUXGA resolution, and a range of great features including HDBaseT and HDMI connectivity, screen mirroring and lens shift. Projection System 3LCD Technology, RGB liquid crystal shutter LCD Panel 0.67 inch with D10 Resolution WUXGA, 1920 x 1200, 16:10 High Definition Full HD Aspect Ratio 16:10 Contrast Ratio 2,500,000 : 1 Light source Laser Laser Light source 20,000 hours Durability High, 30,000 hours Durability Eco Keystone Correction Manual vertical: $\pm 30^\circ$, Manual horizontal $\pm 30^\circ$ Colour Reproduction Upto 1.07 billion colour	1.00	NOS	6,17,817.0 0	6,17,817.00
71	R1-HBTMC/VIS/FA-10	Supply, Installation, Testing & Commissioning of High Gain Fabric , Matte Finish 200" D Motorized Projector Screen	1.00	NOS	2,96,714.0 0	2,96,714.00
72	R1-HBTMC/VIS/FA-24	Supply, Installation, testing and commissioning of HDBaseT Connectivity – extends an HDMI connection up to 100m via a single Cat 5e/6/6a, Supports HDBaseT Long Reach Mode – up to 150 m via a single Cat 5e/6 cable at resolutions up to 1080p, HDMI (3D, Deep Color, 4K), HDCP 2.2 compatible, Supports resolutions of up to Ultra HD 4kx2k and 1080p Full HD, Consumer Electronic Control (CEC) allows interconnected HDMI devices to communicate and respond to a single remote control, Supports wide screen format, Plug and play– no software required Built- in 8KV/ 15 KV ESD protection. Rack Mountable.	1.00	NOS	90,011.00	90,011.00
LIFT WORK						
73	HE1-18-002-001	Supply, installation, testing and commissioning of fully automatic glass elevator(Pt.33)	1.00	Nos	33,30,429.0 0	33,30,429.00
74	R3-ME-7-4-m	Earthing Continuity Conductors - Bare G.I. Conductor size 8 SWG	104	Mtr	9.00	936.00
75	R3-ME-7-4-e	Earthing Continuity Conductors - 25 x 3mm GI	25	Mtr	50.00	1250.00
GRAND TOTAL (I+II)					Sub Total	1,20,55,573.00

SUMMARY			
1	CIVIL WORK COST		Rs. 1,72,17,906.00
2	MEP WORK COST		Rs. 0,87,25,144.00
3	LIFT WORK		Rs. 0,33,30,429.00
	TOTAL IN Rs.		Rs. 2,92,73,479.00

BRIHANMUMBAI MUNICIPAL CORPORATION

DEVIATION SCHEDULE NOT APPLICABLE TO THIS TENDER

Sub: Proposed works to be carried out at Annabhau Sathe Auditorium in campus of V.J.B.Udyan , Byculla in 'E'Ward on the land bearing CTS No.563(pt).Mazgoan Division in 'E' Ward .

The tenderer shall state any deviation from the specifications, terms and conditions of documents contained in this offer. Irrespective of references to deviations made in covering letter / correspondence / drawings / catalogues, the tenderer shall list separately all deviations in this schedule. Except for deviations brought out specifically in this schedule, it will be completely in accordance with these specifications & this interpretation shall be binding on tenderer.

=====

Full name and address Sign & Seal of Tenderer

MANUFACTURERS AUTHORISATION CERTIFICATE
(In case of tenderer who are authorized by the manufacturer)
(On Letter head of Manufacturer)

To,
The Municipal Commissioner, BMC.

Mumbai.

This is to certify that M/s.....are
Authorized dealer/ distributor/Channel Partners of..... for
dealing in

We authorize them to quote for the tender bearing
tender no to be submitted on..... and also promise
to provide all the necessary technical support during work execution & O&M period.

Place :

Seal of Manufacturer & Sign of
Authorised signatory

Date

(Note: This letter shall be signed by a COMPETENT person and have the power of attorney to bind the manufactures.)

PROFORMA TO BE TAKEN FROM MANUFACTURER

(In case of manufacturer bidding the e-tender)

(On Letter head of Manufacturer)

To,
The Municipal Commissioner,
BMC.Mumbai.

Subject :- _____

Dear Sir,

We, _____ an established and reputed

manufacturer of _____ and reputed having factory/factories at

We, as manufacturer, agree to provide complete support and guarantee along with complete after sales support throughout the contract period and O&M period as specified in the e-tender.

Place :

Seal of
Manufacturer & Sign of

Authorized signatory

Date :

(Note: This letter shall be signed by a component person and having the power of attorney to bind the manufactures.)

SELECTION OF MATERIAL

1. All materials brought on the site of work and meant to be used in the same, shall be the best of their respective kinds and to the satisfaction of the Engineer, User Department & PMC. The Engineer or his representative will accept that the materials are really the best of their kinds, when it is proved beyond doubt that no better materials of the particular kind in question are available in the market.
2. The contractor shall obtain the approval of the Engineer of samples of all materials to be used in the works and shall deposit these samples with him before placing an order for the materials with the suppliers. The materials brought on the works shall conform in every respect to their approved samples. Fresh samples shall be deposited with the Engineer whenever the type or source of any material changes.
3. The contractor shall check each fresh consignment of materials as it is brought to the site of works to see that they conform in all respects to the Specifications of the samples approved by the Engineer, or both.
4. The Engineer will have the option to have any of the materials tested to find out whether they are in accordance with the Specifications and the Contractor will bear all expenses for such testing. All Bills, vouchers and test certificates, which in the opinion of the Engineer or his representative are necessary to convince him as to the quality of the materials or their suitability shall be produced for his inspection when required.
5. Any materials that have not been found to conform to the specifications will be rejected forthwith and shall be removed from the site by the contractor at his own cost within 24 hours.
6. The Engineer shall have power to cause the Contractors to purchase and use such materials from any particular source, as may in his opinion be necessary for the proper execution of the work.
7. Notwithstanding the source, the sand shall be washed using a sand washing machine before use.
8. Contractor shall provide material as per makes listed in Technical Specifications for Laser system items & for general electrification, items such as cable, lugs etc. are as per **USOR-2023** with in quoted cost.

LIST OF APPROVED BUILDING MATERIALS

Following brands of building materials have been approved by Ch.E.(B.M)/ Director(E. S.&P.). The brands of the building materials approved and mentioned in the list given below shall be used.. For the materials other than mentioned in the list brands of only ISI marks shall be allowed to be used with prior written permission of the engineer, for individual work. The contractors shall distinctly understand that it will not be their prerogative to insist for use of particular make/brand from following list and final selection will have to be done with approval of engineer. The following list of approved building materials may vary some new category/brand may be added or existing ones be deleted. The contractor shall use the brand as directed by the engineer.

Sr.No.	Category	Product	Brand Name if any	Manufacturer's Name	Contact Details
1	Cement	Cement OPC-43 Grade OPC 53-Grade PPC PSC		M/s Bharati Cement Corporation pvt. Ltd.Shop No.1, Chiranjeep Co-operative Housung society ltd. Chittaranjandas Road, Near Tilak Smarak Mandir, Vile parle East,,Mumbai-400057	(040)-30006999
2	Cement	Cement OPC-43 Grade OPC 53-Grade PPC	Coromondel King	M/s The India Cement Ltd.405, coral classic, 20th Road, Near ICICI Bank, Chembur (E), Mumbai-400071	(040)-67106111/22/44
3	ReadyMix Plaster	Easy Plast Ready Mix Plaster	“Wal Plast”	M/s Wal Plast Products Pvt. Ltd. Rainbow Building, Plot no. 13, Sector -24, Sanpada Rly station, Navi Mumbai-400 705	(022)-41418282
4	Steel	TMT bars of Grade Fe 500	“RAMA THERMAX”	M/s. Rama Power & Steel Pvt Ltd. Fact: KH no.344/1 plot no. 101, Borjhara, Near New CSEB Sub Station, Urla Ind.Area, Hirapur – Tendua Road, Raipur (C.G.) 492 001.	07672- 405555
5	Steel	TMT bars of Grade Fe 500, Fe 550 and Fe 550D	“Bhagwati”	M/s Bhagwati Steel Cast Pvt Ltd. Unit no- 601 – A, 6th Floor, western Edge-1, Kanakia spaces, Western Express Highway, Opp. Magathane Bus Depot Borivali (E), mumbai 400 066.	022- 40354444 Fax- 403504432
6	Ceiling Tile	Ceiling Tile Light Weight 2'x 2' Calcium Silicate ceiling tile		M/s. Aerolite Ceiling System, 9/431, Katre Bhavan, 15th Floor, TOS III, Khar (W), Mumbai 400 052	(022)- 23449240
7	Tile	Vitrified Tile conforming (I.S. 15622:2006)	R.A.K.	M/s. R.A.K. Ceramics India Pvt.Ltd. 1-6 Dheeraj Heritage, 1st Floor, <ilan subway, S.V.Road, Santacruz (W), Mumbai 400 054	(022)-26605704/06

Sr.No.	Category	Product	Brand Name if any	Manufacturer's Name	Contact Details
8	Tiles	Vitrified Tile conforming (I.S. 15622:2006)	Zeal Top	M/s. Zeal Top Granito Pvt. Ltd. Old Ghantu Road, Morbi - 363642.Gujarat State.	(2822)- 241316, 241317
9	Tiles	Floor tiles IS 13630:2006 Ceramic Wall tile IS 15622:2006 Vitrified tiles IS 15622:2006		M/s Akash Ceramic Pvt Ltd. Complex, 3rd floor, Drive-in cinema road, Ahmedabad-54	
10	Tiles/ Stones	Composite Marble & Composite Quartz	Kalingaston	M/s Classic Marble Co. Pvt Ltd.. 15, Bhandup Village road, subhash Nagar, Bhandup (W), Mumbai – 67.	
11	RCC pipes	Pipes (R.C.)NP3 & NP4		M/s Shreeji Pipe Industries, 5, Panchwati, 1st floor, Jn. Of S.V.Road & Balaji Road, Kandivali (W), Mumbai -67	(022)- 28052849 & 28062161
12	RCC pipes	1) NP2 class RCC pipes (150 mm - 300 mm) 2) NP3 class RCC pipes (150 mm - 1200 mm) 2) NP4 class RCC pipes (150 mm - 1200 mm)	Pranali	M/s Pranali Cement Pipes Pvt. Ltd. 311, Kesar Krupa CHS Ltd., Above Saraswat Bank Ltd., Chandavarkar Road, Borivali (W), Mumbai-400 092	9324622669
13	RCC pipes	Pipes(R.C.) NP3(150-1800mm)	Sementex	M/s Sementex Spun Pipes Pvt. Ltd. 5/ Balaji Arcade. S.V.Road, Kandivali (W), Mumbai-400 067	
14	RCC pipes	Pipes(R.C.) NP3(450-1800mm)	Unicem	M/s Unicem Vibro-cast pipe Industries 16,4th floor,Highway Tower, Pune-Mumbai Road,Chindawad Pune-411019	
15	PVC & HDPE Pipes		Kriti	M/s Kriti Industries (I) Ltd. Plot 75-86, Sector II, Pithampur, Dist. Dhar, M.P. 454775.	0731 – 2704716/ 17/ 18
16	HDPE Pipes & fittings	HDPE drainage pipes and fittings	Geberit	M/s Geberit Plumbing Technology India Pvt. Ltd. 305, B-Wing, Dynatsy Bussiness park, Andheri Kurla Road, Andheri € Mumbai 400 059.	(080) – 23376127/ 23570612

Sr.No.	Category	Product	Brand Name if any	Manufacturer's Name	Contact Details
17	UPVC & CPVC Pipes	i)UPVC Pipes conforming to IS 15328:2003, ii)UPVC Pipes conforming to IS 13592:1992. iii)UPVC injection moulding fittings conforming to IS 14735: 1999 iv)CPVC pipes conforming to IS 15778 and CPVC fitting components.	B-SURE	M/s Jain Irrigation System Ltd. Jain Plastic Park, Bamb-hori, N.H.No.6, Dharangaon, Jalgaon – 425 001.	+91-257-2258011 FAX +91-257-2258111
18	HDPE Pipes & fittings	UPVC Pipes Conforming to IS 13592:1992 Type: A & Type: B (Both having diameter 75mm, 110mm & 160mm) and UPVC Injection moulding fittings	Ajay Drainline	M/s Ajay Industrial Corporation Ltd. C/o Hiral Logistic Pvt Ltd. Gate No. 1278/ 79, Pune Saswad Road, Wadki, Pune – 402 308.	Tel: +911165484046 Fax: +911141677252
19	Chemicals	Construction Chemicals	Group-I (Waterproofing system) Group-II (Perma tiling Aids) Group-III (Repair & Bounding Agent) Group-IV (Admixture) Group-V (Perma coating & protection system) Group-VI (Perma construction Aids)	M/s Perma Construction Aids Pvt.Ltd. 611/612 Nirmal Corporate Centre,Mulund(W) Mumbai-400080	
20	Chemicals	Construction Chemicals	M/s Krishna Conchem Product Ltd.	M/s Krishna Conchem Product Ltd. Unit-2, Bldg. 6, Sect.3, millennium Business Park, Mahape, Navi Mumbai - 400710.	(022)-32986329 (022)- 27782923 09324924398
21	Paints	WP cement paint, Acrylic paint, Emulsion paint.	Faircoat-Tex Finish Fairtex acrylic, Fairshine emulsion Fairlook	M/s. Hindusthan Paints and products, 11-A New Empire industrial Estate, Kondivita road Andheri(E), Mumbai 400059	(022)-28223341

Sr.No.	Category	Product	Brand Name if any	Manufacturer's Name	Contact Details
22	Paints	Distemper	Flora acrylic distemper, Fairgloss plastic emulsion paint, Fairtuff textures	M/s. Hindusthan Paints and products, 11-A New Empire industrial Estate, Kondivita road Andheri(E), Mumbai 400059	(022)-28223341
23	Paints	Paints (external and internal)		M/s. Godavari paints Pvt. Ltd., Tulsiram Gupta Mills Estate, Darukhana, Reay Road, Mumbai 400010	(022)-23723227
24	Paints	Paints (external and internal)		M/s. Jayant Colour & Chemical Industries, Tulsiram Gupta Mills Estate, Darukhana, Reay Road, Mumbai 400010	(022)-23721249
25	FRP manhole frames and covers and Storm water grating cover & frames		KK	M/s. K.K. Manhole and gratings co., shop No 8 sterling apts, Gangapur road, Anandwadi, Nasik 422013.	(0253)-2340556
26	Precast concrete manhole frames and covers and Storm water grating cover & frames		KK	M/s. K.K. Manhole and gratings co., shop No 8 sterling apts, Gangapur road, Anandwadi, Nasik 422013.	(0253)-2340556
27	Ductile iron manhole frames and covers and Gratings		PLASMA	M/s. Plasma alloys Pvt Ltd. Survey no. 196, N.H.27, Gondal Road, Veraval (Shapar) Dist- Rajkot, Pin No.360 024 Gujarat State.	(2827)-253766 Fax: (2827)-253966
28	Furniture, Continous Seating System & Landscape		Baijnath	M/s Olympia Seating Pvt. Ltd. R-535, TTC Industrial area, Rabale, Navi Mumbai 400 701	(022)- 32679979/ 9619111970
29	Reinforcement Protection coating	Galvanized Reinforcement Bars	GBARZ	M/s Galbro Ispat Galvanizers Pvt Ltd. Gut No: 11/12, Opp. Thana Steels, Khanivali road, Village Khupri, Taluka Wada, Dist. -Thane 421 312, Maharashtra state.	9819018175
30	Sandwich panels	Isobuild structural insulated sandwich panels & Quick build panels	Steilswell	M/s Beardsell Limited, Kanara business center, A-wing 102-104, Kanara engg comp., Laxmi nagar, Ghatkopar-Andheri Link Road, Ghatkopar (E) Mumbai – 400 075.	022-25000786/ 25000832

Note: This list of approved building materials supersedes the earlier list of approved building materials. All the conditions mentioned in the letter of approval shall be scrupulously adhered to by the engineering staff. In case of ISI marked brands, the latest valid BIS endorsement shall be insisted from the manufacturer. The valid list of approved Building Materials at the time of execution of works can be obtained from the Dy.Ch.Eng.BM.&(HIC & WPU)'s office.

List of Approved M & E Materials

Unless otherwise mentioned specifically only one of the following approved make/ first category brands of various electrical accessories will be used. The contractors should distinctly understand that it will no be their prerogative to insist on using a particular make/brand amongst the approved ones. Municipal Engineers directives will be final regarding selection of material. Approved list of Electrical material in USOR-2023 shall be followed. The work of 3D audio/video works shall be carried out as per the specifications and approved list of material enclosed here with. In case of non-availability of any particular make of material in the market, concern site in charge's decision will be final. The list is subject to revision from time to time.

List of Approved M & E Materials (Use latest as per USOR-2023)		
Sr. No.	Item Description	Makes
1	2	3
1.	H.T.Switch Gear	Siemens, L & T, Kirloskar, Bhel, English Electric, Abb, Jyoti, Crompton Greaves
2.	L.T.Switch Gear	
A)	Enclosed In Sheet Steel With H.R.C. Fuses For 63 Amps & Above	1st Category L&T, Siement Havelles, Jyoti, Cpl, Crompton Greaves,Kew 2nd Category: Kalki, Standard, Indoasian, Versatrip
B)	Cast Iron With Rewirable Fuses	1st Category: Bosma, Kew, Cpl 2nd Category: Kalki, Harisons
C)	Cast Iron Or Enclosed In Sheet Steel Change Over Switch	1st Category: Kew, Bosma, Cpl, Havells, Indo-Asian, Indo-Kopp 2nd Category: Kalki
D)	Circuit Breakers (Moulded Case)	L&T, Siemen, Havells, Indo-Kopp, Crompton-Greaves
E)	Minature Circuit Breakers	Mds, Indo-Asian, Havells, Guts, Versatripp, Indo-Kopp
F)	Cubical Panel Switch Gear Accessories D/Tpn/Do Switches Isolators	L&T, Siemens, Kew Standard, Cpl, Havells, Indoasian, Versastrip
	ii) Rotrary Cam Type	Siemens, Thakoor, Kaycee, Aei, Standardgold
	iii)Start/Stop Push Button Stations	L&T, Siemens, Cutler-Hammer, Kaycee, Havells
	iv) Contractors	Crompton Greaves, Havells, L&T, Siemens, Cutter-Hammer
	v)Indicating Lamp(Neon Type)	Siemens, Vaishno
	vi) Indicating Lamp Filament Type With Resistance	National, Kamla
	vii) Earthleakage Circuit Breakers	Datar, Standard, L&T, English Electric, Indo-Asian, Havelles, Guts, Indo-Kopp, Versastrip
	viii) H.R.C. Fuse	Siemens, L&T, English Electric Kaycee, Havelles, Indo-Asian, Versastrip, Guts
3.	Transformer	Essun, Kirloskar, Bhel, Bharat Bijlee, Emco, Gec, Crompton Greaves, Voltamps
4.	Distribution Boards	
A)	With Rewirable Fuses	Bosma,Kew, Stanlely, Cpl, Havells, Indo-Asian,Kalki

List of Approved M & E Materials (Use latest as per USOR-2023)		
Sr. No.	Item Description	Makes
B)	With Hrc Fuse	English Electric, L&T, Siemens, Kew, Kaycee, Havells, Indo-Asian
C)	With Mcb's	Mds, Standard, Indoasian, Havells, Versastrip
5.	Cables	1st Category: Tropodur, Gloster, Asian, Polycab, Finolex, Nicco, Universal, Incab, Havelles, Torrent 2nd Category: Supreme, Fajcab, Anchor, Fixocab, Vishal, Rolex, Sulight, Diamond, Cona
6.	Socket/Lugs	Dowells, Jainson
7.	Pvc Wires	1st Category: Finolex, Phoneix, Ploycab, Nicco, Havelles, Torrent, Rr Kabel (Superex) 2nd Category: Rajcab, Polipl, Ast, Supreme, Anchor, Vishal, Pyroflex, Philco, Rolex, Sunlight, Cona
8.	Conduit	
A)	M.S. Black And G.O. Conduit	Bec, Vimco, Bi, Ewc
B)	Rigid Pvc Conduit And Accessories	1st Category : Precision, Asian, Diamond 2nd Category : Bec, Circle, Arc, Swastik
9.	Pvc Casin-N-Caping & Pvc Casing-N-Caping Accessories With Isi Mark Or As Peb.S.No.4778	Presto-Plast, Modi's Sunplast, Precision, Diamond, Circle, Ark, Alta, Superplast, Shriplast
10.	Screws	Nettle Fold, Kingfold, Precision Fastners
11.	Plano Switches Flush Mounting (5 To 15 Amps)/Wall Sockets & Plugs (Surface Mounting), Holder Pendant /Batten /Angle, Ceiling Rc (For 3 Core Twisted Flexible Wire), 30 Amps D.P. Ticking Type Switch Fusewith Indicating Lamp, Bellush Surface Mounting, Fluxh Mounting	Anchor, Kalki, Stront, Leader, Cona, Modern, Ssk, Harisons, Havells, Safron Vinay, Precious Standard.
12.	Wall Socket And Plugs Metal Clad (Ray Roll Type)	Gec, Ae, Havells, Crompton Creaves, Indoasian, Standard-Gold, Ssk, Precision
13.	Pvs Board	Sunwood, Presto-Plast
14.	Special Accessories Concealed/Decorative (Plate Switches)	Cpl, Roma, Anchor, Precision, Indoasian, Harisons
15.	Two/Three Core Flexible Wires	Polycab Pyroflex, Philco, Fixocab, R Cab, Poliplast, Anchor, Rr Kabel
16.	Storage Heater With Thermostatic Control	Bajaj, Shpereh , Racold, Ketco,Crompton, Acha Therm
17.	Lamps	
A)	Glsfilament	Bajaj, Crompton, Philips, Gen, Mysore, Ece, Hmt, Surya, Cema
B)	Fluoresent, Homv, Hp/Lpsv, Halogen/Mll/9 W, 11 W & Cfl	1st Category: Bajaj, Crompton, Philips 2nd Category: Hmt, Anchor, Fec, Surya, Osram, Cema
C)	HALOGEN/MLL/ 9 W, 11 W & METAL HALIDE	GEC, PHILIPS, CROMPTON, BAJAJ
18.	Fitting For Fluroscent Hpmv Lamps & Lp/Hpsv Lamps With Copper Wound Chokes And Condensers Bulkhead Fittings, Dufolux/Dispersive Reflectors, Floor Light Fittings	1st Category: Philips, Crompton, Bajaj Wipro, Surya 2nd Category: Monarch, Kalki, Altralite, Vikrant, Darhan, National, Shakti, Anchor, Ansu, Yogolite, Harisons,Flxolite, Phoenix, Glolite

List of Approved M & E Materials (Use latest as per USOR-2023)		
Sr. No.	Item Description	Makes
19.	Special Fittings	Philips, Bajaj, Crompton, Canara, Gemini Global, Tulip
20.	Bell	
A.	Call Bell/Buzzer	Bajaj, Anchor, Harisons, Rider
B)	Gong Bell/ Alaram Bell	Edison Target, Modern, Kheraj
21.	Exhaust Fans/Pedestal Fan Air Circulators	1st Category : Crompton, Bajaj, Almonard, Gec-Alstom 2nd Category: Alfa, Ansu, Innova, Cinni, Adler
22.	A) Ceiling Fans With Double Ball Bearings	1st Category : Crompton (High Breeze) 2nd Category : Orient (New Breeze & Summer Cool), Bajaj (Poular Grace Dhs)
	B) Table Fans Wall Mounting Fans/ Cabin Fans	Crompton, Usha, Ralli, Bajaj (Supreme), Innova, Alpha, Cinni
23.	A) Ballast For Fluroscnt Lamp (Repair Work)	Phillips, Crompton, Bajaj
	B) Electronic Ballast	Ligth Guard, Opal, Esquite, Techno-Vision, Innava, Neeki, Glolite, M.G.A.
24.	A) Capacitor For Motive Power	Asian, Electronic, Usha, Enco, Crompton-Greaves, Madhav, Khatau, Junkar, Rd, Msil.
	B) Condenser For Fluroscnt (Repairs Work)	Asian, Elconic, Priya, Rd & Of Manufacturers Approved In Flourescent Fittings
25.	D.G.Set	
A)	Engine	Kirloskar, Ruston, Greaves- Cotton
B)	Alternator	Kirloskar, Ngef, Crompton Greaves
26.	Submersible Electrically Driven Water Pump Sets	Kirloskar, Ksb, Su, Calama, Altanta, Waterman, Laxmi, Pew, Darling, Agasti
27.	Diesel Engine Driven Pump Sets	Kirloskar, Laxmi
28.	Electrically Driven Pump Set Coupled Type, Mono Block, Self Priming, Jet Pumps	Kirloskar, Crompton, Jyoti, Ksb, Mather & Platt, Bharat Bijilee, Voltas, Beacon, Laskhmi, Pew, Jmp, Baltiboi
29.	Electric Motors	Kirloskar, Siemens, Bharat-Bijlee, Crompton, Jyoti Brown-Boveri, Baltiboi, Gec-Alstom, Laxmi, Pew
30.	Air Break Starters For Motors	Siemens, L&T, Crompton-Greaves, Cutler Hammer
31.	Terminal Lock	Elmex, Everest, Jyoti, Phoneix
32.	Meters: Ammeter & Voltmeter (Analog)	Automatic Electric, Simpson, Udey, Meco, Indian Meters, Kusu Meco
33.	Energy Meters	Automatic Electric, Meco, Indian Meters, Havels, Indoassian
34.	Water Level Control Equipment	S.B.Electricals, Su-Bhaskar, Minilec, Accet, Agema22, Rds.
35.	Stage Light	Canara Industries, Wadia Industries, Radilux
36.	Emergency Lights	Prolite, Profile, Rider, Tekno-Vision, Kheraj, Bpl, Glolite
37.	Plumbing Accessories	
A)	G.I.Pipes	Zenith, Tata, Jindal, Loydd
B)	G.O.Bends	Tata, Goel
C)	C.I.Pipes	Isi Approved Brand
D)	A) Gate Valve (Gun Metal) Isi Brand Only Nrvs (Gun Metal) Brass Foot Valve B) Springloaded Foot Valve	Leader, Sant, New Swati, L & K Any Isi Mark Swatior Any Isi Marked Valve

List of Approved M & E Materials (Use latest as per USOR-2023)		
Sr. No.	Item Description	Makes
38.	Wafer Type Butterfly / Check Valve	Crowly & Ray, L & K, Unvis, Advance
39.	C.I.Pipe Socket C.I.Nrvs C.I.Foot Valve C.I.Sluice Valve	Indian Iron & Steel Co., Tisco Ujjain Pipe, Jamshedpur, Bhadravai, Kirloskar, Ivc Swati, Mayur
40.	SPRAY PAINTING OF C/FANS OR Any EQUIPMENT	ASIAN PAINTS APCOLITE BRAND
41	Pole Painting	One Cost Red Oxide And Two Coats Or Silver Of Asian Paints (Three Mango Brand)
42.	Bearings	Skf, Tata, Nbc
43	Parking System	Sheltron, Kauls, smart elevator
44	Sliding Gate Actuator System	Gandhi Automation, Intertrade, Toshi

HVAC MAKE OF EQUIPMENT AND APPROVED MANUFACTURES: N.A.		
Sr. No.	Items	Makes
1	Chiller	Bluestar, Trane,
2	Air Handling Units	Zeco VTS, Fino power, Edgetech, Advantek
3	Split /Ductable Units	Bluestar, Carrier, Voltas, Daikin, O – General, LG
4	VRV System	Daikin, Toshiba, Mitsubishi, LG, Samsung Bluestar
5	Inline Fans	Kruger, Caryaire, Chysol, Maico
6	Cabinet Fans/ Smoke Fans	Kruger, Caryaire, Chysol, Maico
7	Propeller Fans	Kruger, GEC, Crompton, Maico
8	Aluminum Grilles	Dynacraft, Cosmos, Airproduct
9	Opposed Blade Damper	Dynacraft, Cosmos, Airproduct
10	Volume control Dampers	Dynacraft, Cosmos, Airproduct
11	Fire Dampers	Carryaire, Airtech, Dynacraft (Trox)
12	Motorized Actuators	Joventa, Belimo, Honey well
13	Air Filters	Pure Air, Airtech, Thermodyne.
14	Refrigerant Piping	Mandev, Mehta , Rajco
15	Drain piping	Prince, Supreme.
16	Cooling Tower	Himagiri, Ascent
17	Insulation:	
	a. Fiberglass	UP Twiga, Kimco.
	b. Close Cell Nitrile Rubber	Armaflex, Kflex
	c. PUF Insulation	Lloyd Insulation Or Equal
18	Vibration Isolation Pads	Resistoflex.
19	Vibration Isolators	Dunlop, CORI, Resistoflex.
20	Insulated Flexible duct	Caryaire, Atco, SONODEC
21	Flexible Duct connectors	Klima Tech
22	Instrument test ports	Klima Tech

HVAC MAKE OF EQUIPMENT AND APPROVED MANUFACTURES: N.A.		
Sr. No.	Items	Makes
23	Airflow Regulator	Aldes CAR or equal
24	GI Ducting	Sail, Jindal
25	Preinsulated Ducting	PAL/HAPRI or equivalent make.
26	Flexible Ducts	Caryaire, CMS
27	Pressure Gauges & General Instruments	Pyro, Thermometer , Wika
28	Variable Speed Drives	Telemecanique Altivar 38, Danfoss, Siemens, ABB
29	Controls	Johnsons Controls, Siemens, Schneider
30	VAV Boxes	Cosmos.
31	Cables	RR, Finolex.
32	Sequential Controller	Carel (Aria), Dynamic control , Power electronics, system, GIS, photon or equivalent.
33	Pipes & Valves:	
	a. MS Pipes	Jindal, Zenith, Tata, Zeco.
34	Valves & Strainer:	
	a. Gate Valve	G-G Bombay Metal, Alloys Mfg. Co., Kirloskar
	b. Balancing Valves	Tour & Anderson, Flowcon
	c. Butterfly Valves with motorized actuators	Johnson Controls, Siemens, Tata Honeywell
	d. Butter fly & Ball Valves	Audco India Ltd. Kitz
	e. Check Valves	Kirloskar, Leader, Advance
	f. Strainer Y type	Emerald, Trishul
	g. Vibration Eliminators	BDK, Resistoflex, CORI,

LIST OF APPROVED MAKES FOR STAGE LIGHTING AND CRAFT SYSTEMS		
Sr. No.	Items	Makes
	System Integrators	Canara, Barbizon, _____ As customised by
1	Suspenders/ Clamps/ Brackets/ Auxiliary Cross Supports	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
2	'C' track	Canara, Selecon, Barbizon, Arri
3	MS Grating	Indiana, KR Structures, Canara, Selecon, Arri,Sadhane
4	Perforated Cable Trays & Lids	Indiana, KR Structures, Canara, Selecon, Barbizon, Arri
5	PVC conduit	Precision, Garware, Polycab
6	Marshalling Box – CEE, IEC, Axuliory	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
8	CEE, IEC, DMX & EM-TRIP Box	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
10	Axuliory Power Junction Box	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc

LIST OF APPROVED MAKES FOR STAGE LIGHTING AND CRAFT SYSTEMS		
Sr. No.	Items	Makes
12	Lighting (Direct & General) – Junction Box	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
14	Lighting (Direct & General) – Distribution Board	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
16	Power & Control – Junction Box	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
17	MCCP & RCP	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
18.1	19" Din Rack	Rittal, Din rack, Canara, Arri
18.2	PDCP & MCBP	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
18.4	Splitter	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
18.5	Dimmer packs	ADB, Lite puter, Zero88, ETC
23	Lighting Console	ADB, Lite puter, Zero88, ETC
24	UPS	Aplab, APC, Tanish
26	Decoder	Canara,Selecon,Arri,Radilus,Desisti, etc
27	EPABX	Siemens, Syntel telecom, Accord, approved equivalent
28	Motorised lighting bar	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
29	Teleclimber hoists	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
30	FOH-LB	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
31	SFOH-LB	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
32	DMX male/ female/ termination connector and DMX Termination plug	Nuetrik, Lite Putter, Amphenol
33	Cables	Polycab, RR kabel, Finolex, Sbee, Falcon
36	DMX strobe	Canara, Selecon,Arri,Radilus,Desisti, etc
37	Fog machine and Fog liquid	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
38	1500W Haze machine	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
39	Metal Gobos and Assorted colour gel filter rolls Refer supp. leaflet and tech. spec. No-39	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
40	Suspenders/clamps/brackets/ Auxiliary cross supports	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc

LIST OF APPROVED MAKES FOR STAGE LIGHTING AND CRAFT SYSTEMS		
Sr. No.	Items	Makes
41	Motorised main scallop bar Refer supp. leaflet and tech. spec. No-41	Canara, Selecon, Barbizon, Arri
41a	Motorised House curtain, Mid curtain and Rear curtain tracks Refer supp. leaflet and tech. spec. No-41a	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
42	Frill & Utility Bars	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
43	Cyclorama Frame	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
44	Wing Frame	Canara, Selecon, Barbizon, Arri,Radilus,Desisti,etc
48	Fire Retardant (Inherently & Permenantly) Fabric	Rajasthan Spinning & Weaving Mills, Approved equivalent
49	Cyclorama PVC Screen Perforated	Rosco, Showtex, Approved equivalent
50	Lights and Accessories	Canara, Selecon, Arri,,Radilus,Desisti,etc
51	Lamps/RGBW fixtures	Osram, GE, Philips, Ushio, Crompton , Aura
52	Lift	OTIS/ Mitsubishi / Kone / Schindler/ Thyssenkrup
53	Display system	LG/SAMSUNG /SONY /EQUIVALENT

SECTION 11

FRAUD AND CORRUPT PRACTICES

FRAUD AND CORRUPT PRACTICES

- The Applicants and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process. Notwithstanding anything to the contrary contained herein, the Authority may reject an Application without being liable in any manner whatsoever to the Applicant if it determines that the Applicant has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process.
- Without prejudice to the rights of the Authority under relevant Clause hereinabove, if an Applicant is found by the Authority to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, such Applicant shall not be eligible to participate in any tender or RFQ issued by the Authority during a period of 2 (two) years from the date such Applicant is found by the Authority to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as the case may be.
- For the purposes of this Clause, the following terms shall have the meaning hereinafter respectively assigned to them:
 - A. **“corrupt practice”** means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process (for avoidance of doubt, offering of employment to, or employing, or engaging in any manner whatsoever, directly or indirectly, any official of the Authority who is or has been associated in any manner, directly or indirectly, with the Bidding Process or the LOA or has dealt with matters concerning the Concession Agreement or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the Authority, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process); or save and except as permitted under the relevant sub clause, engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the LOA or after the execution of the Concession Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA

or the Concession Agreement, who at any time has been or is a legal, financial or technical adviser of the Authority in relation to any matter concerning the Project;

- B. **“fraudulent practice”** means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process;
- C. **“coercive practice”** means impairing or harming or threatening to impair or harm, directly or indirectly, any person or property to influence any person's participation or action in the Bidding Process;
- D. **“undesirable practice”** means (i) establishing contact with any person connected with or employed or engaged by the Authority with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest; and
- E. **“Restrictive practice”** means forming a cartel or arriving at any understanding or arrangement among Applicants with the objective of restricting or manipulating a full and fair competition in the Bidding Process.
- F. If the Employer/Financier determines that the Contractor has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days' notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site, and the provisions of relevant Clause shall apply as if such expulsion had been made.
- G. Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with relevant Clause.
For the purposes of this Sub-Clause:
 - i. **“corrupt practice”** is the offering, giving, receiving to soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
 - ii. **“another party”** refers to a public official acting in relation to the procurement process or contract execution. In this context, **“public official”** includes Financier staff and employees of other organizations taking or reviewing procurement decisions.
 - iii. **“fraudulent practice”** is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a

- financial or other benefit or to avoid an obligation;
- iv. “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
 - v. “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
 - vi. “obstructive practice” is deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede the Financier investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
 - vii. acts intended to materially impede the exercise of the Financer’s inspection and audit rights provided .
 - viii. “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.
 - ix. ”parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non-competitive levels.
 - x. a “party” refers to a participant in the procurement process or contract execution.

SECTION 12

PRE BID MEETING

PREBID MEETING

Pre-bid meeting of the interested parties shall be convened as per Header Data ,on Dt. / / 2024 at 11.00 am in the chamber of Director(E.S&P.) Office,3rdfloor ,MHO Annex Building ,Fort ,Mumbai-400001. A maximum of three representatives of each Applicant shall be allowed to participate on production of authority letter from the Applicant. Bidders are requested to send their queries /suggestion on mail eebc.city@mcgm.gov.in three days prior to pre-bid meeting ,also submit in hard copies in the office of EE(BC)City at Worli Hub Building ,Worli Mumbai-18 .

During the course of Pre-bid meeting, the Applicants will be free to seek clarifications and make suggestions for consideration of the Authority. The Authority shall Endeavour to provide clarifications and such further information as it may, in its sole discretion, consider appropriate for facilitating a fair, transparent and competitive Bidding Process.

Any tenderer requiring any clarification of the tender document and/or the works may submit his questionnaires in writing to reach the Dy. C.E.(B.C.) City's Office at least 2 days before the meeting.

SECTION 13

LIST OF APPROVED BANKS

LIST OF APPROVED BANKS

1. The following Banks with their branches in Greater Mumbai and in suburbs and extended suburbs up to Virar and Kalyan have been approved only for the purpose of accepting Banker's guarantee from 1997-98 onwards until further instructions.
2. The Bankers Guarantee issued by branches of approved Banks beyond Kalyan and Virar can be accepted only if the said Banker's Guarantee is countersigned by the Manager of a branch of the same Bank, within the Mumbai Limit categorically endorsing thereon that said bankers Guarantee is binding on the endorsing Branch of the bank within Mumbai limits and is liable to be enforced against the said branch of the Bank in case of default by the contractor/supplier furnishing the bankers Guarantee.

3. List of approved Banks:-

A	S.B.I and its subsidiary Banks
1	State Bank Of India.
2	State Bank Of Bikaner & Jaipur.
3	State Bank Of Hyderabad.
4	State Bank Of Mysore.
5	State Bank Of Patiyala.
6	State Bank Of Saurashtra.
7	State Bank Of Travankore.
B	Nationalized Banks
8	Allahabad Bank.
9	Andhra Bank.
10	Bank Of Baroda.
11	Bank Of India.
12	Bank Of Maharashtra.
13	Central Bank Of India.
14	Dena Bank.
15	Indian Bank.
16	Indian Overseas Bank.
17	Oriental Bank Of Commerce.
18	Punjab National Bank.
19	Punjab & Sindh Bank.
20	Syndicate Bank.
21	Union Bank Of India.

22	United Bank Of India.
23	UCO Bank.
24	Vijaya Bank.
24A	Corporation Bank.
C	Scheduled Commercial Banks
25	Bank Of Madura Ltd.
26	Bank Of Rajasthan Ltd.
27	Banaras State Bank Ltd.
28	Bharat Overseas Bank Ltd
29	Catholic Syrian Bank Ltd.
30	City Union Bank Ltd.
31	Development Credit Bank.
32	Dhanalakshmi Bank Ltd.
33	Federal Bank Ltd.
34	Indsind Bank Ltd.
35	I.C.I.C.I Banking Corporation Ltd.
36	Global Trust Bank Ltd.
37	Jammu & Kashmir Bank Ltd.
38	Karnataka Bank Ltd.
39	KarurVysya Bank Ltd.
40	Laxmi Vilas Bank Ltd.
41	Nedugundi Bank Ltd.
42	Ratnakar Bank Ltd.
43	Sangli Bank Ltd.
44	South Indian Bank Ltd.
45	S.B.I Corporation &Int Bank Ltd.
46	Tamilnadu Mercantile Bank Ltd.
47	United Western Bank Ltd.
48	Vysya Bank Ltd.
D	Schedule Urban Co-op Banks
49	Abhyudaya Co-op Bank Ltd.
50	Bassein Catholic Co-op Bank Ltd.
51	Bharat Co-op Bank Ltd.
52	Bombay Mercantile Co-op Bank Ltd.
53	Cosmos Co-op Bank Ltd.
54	Greater Mumbai Co-op Bank Ltd.
55	JanataSahakari Bank Ltd.
56	Mumbai District Central Co-op Bank Ltd.

57	Maharashtra State Co-op Bank Ltd.
58	New India Co-op Bank Ltd.
59	North Canara G.S.B. Co-op Bank Ltd.
60	Rupee Co-op Bank Ltd.
61	Sangli Urban Co-op Bank Ltd.
62	Saraswat Co-op Bank Ltd.
63	ShamraoVithal Co-op Bank Ltd.
64	Mahanagar Co-op Bank Ltd.
65	Citizen Bank Ltd.
66	Yes Bank Ltd.
E	Foreign Banks
67	ABM AMRO (N.Y.) Bank.
68	American Express Bank Ltd.
69	ANZ Grindlays Bank Ltd.
70	Bank Of America N.T. & S.A.
71	Bank Of Tokyo Ltd.
72	Bankindosuez.
73	BanqueNationale de Paris.
74	Barclays bank.
75	City Bank N.A.
76	Hongkong& Shanghai banking Corporation.
77	Mitsui Taiyokbe Bank Ltd.
78	Standard Chartered Bank.
79	Cho Hung Bank.

SECTION 14

APPENDIX

FORM OF TENDER

To,
The Municipal Commissioner for Greater, Mumbai
Sir,

I/ We have read and examined the following documents relating to the work of

-
-
- i. Notice inviting tender.
 - ii. Directions to tenderers (General and special)
 - iii. General condition of contract for Civil Works of the Brihanmumbai Municipal Corporation as amended up to date.
 - iv. Relevant drawings.
 - v. Specifications.
 - vi. Special directions vii. Annexure A to F.
 - vii. Bill of Quantities and Rates.

- 1A. I/We _____ (full name in capital letters, starting with surname), the Proprietor/ Managing Partner / Managing Director / Holder of the Business, for the establishment / firm /registered company, named herein below ,do hereby offer to
.....Referred to in the specifications and schedule to the accompanying form of contract of the rates entered in the schedule of rates sent herewith and signed by me/ us” (strike out the portions which are not applicable).
- 1B. I/We do here by state and declare that I/We, whose names are given herein below in details with the addresses, have not filled in this tender under any other name or under the name of any other establishment /firm or otherwise, nor are we in any way related or concerned with the establishment /firm or any other person, who have filled in the tender for the aforesaid work.”
2. I/We hereby tender for the execution of the works referred to in the aforesaid documents, upon the terms and conditions, contained or referred to therein and in

accordance with the specification's designs, drawings and other relevant details in all respects.

* At the rates entered in the aforesaid Bill of Quantities and Rates.

3. According to your requirements for payment of Earnest Money amounting to Rs. _____/- (Rs. _____) I/We have deposited the amount through online payment gateways with the C.E. of the Corporation not to bear interest
4. I/We hereby request you not to enter into a contract with any other person/s for the execution of the works until notice of non/acceptance of this tender has first been communicated to me/us, and in consideration of yours agreeing to refrain from so doing I/we agree not to withdraw the offer constituted by this tender before the date of communication to me/us of such notice of non/acceptance, which date shall be not later than ten days from the date of the decision of the Standing Committee or Education Committee of the Corporation, as maybe required under the Mumbai Municipal Corporation Act, not to accept this tender.(Subject to condition 5 below).
5. I/We also agree to keep this tender open for acceptance for a period of 180 days from the date fixed for opening the same and not to make any modifications in its terms and conditions which are not acceptable to the Corporation.
6. I/We agree that the Corporation shall, without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely, if.
 - a. I/We fail to keep the tender open as aforesaid.
 - b. I/We fail to execute the formal contract or make the contract deposit when called upon to do so.
 - c. I/we do not commence the work on or before the date specified by the Engineer in his work order.
7. I/We hereby further agree to pay all the charges of whatsoever nature in connection with the preparation, stamping and execution of the said contract.
8. "I/We.....have failed in the accompanying tender with full knowledge of liabilities and, therefore, we will not raise any objection or dispute in any manner relating to any action, including forfeiture of deposit and blacklisting, for giving any information, which is found to be incorrect and against the instructions and directions given in this tender.
9. "I/We further agree and undertake that in the event it is revealed subsequently

after the allotment of work/contract to me/us, that any information given by me/us in this tender is false or incorrect, I/We shall compensate the Brihanmumbai Municipal Corporation for any such losses or inconvenience caused to the Corporation in any manner and will not resist any claim for such compensation on any ground whatsoever. I/we agree and undertake that I/we shall not claim in such case any amount by way of damages or compensation for cancellation of the contract given to me/us or any work assigned to me/us or is withdrawn by the Corporation,”

Address

Yours faithfully,

.....
.....
.....

Digital Signature of the Tenderer or the Firm

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

- | | | | |
|----|-------|-----------------|----|
| 1. | ..... | A/c No. | |
| 2. | ..... | Name of Bank | |
| 3. | ..... | ..... | 4. |
|  | ..... | Name of Branch | |
| 5. | ..... | ..... |  |
| | | Vender No. | |

AGREEMENT FORM

Tender / Quotation dated 2024

Standing Committee / Education Committee Resolution No.

CONTRACT FOR THE WORKS -----

This agreement made this day of

Two thousand Between

.....

inhabitants of Mumbai, carrying on business

at.....in Bombay under the style

and name of Messrs

(Hereinafter called “the contractor of the one part and Shri ----- the DMC () (hereinafter called “the commissioner” in which expression are included unless the inclusion is inconsistent with the context, or meaning thereof, his successor or successors for the time being holding the office of DMC () of the second part and the Brihanmumbai Municipal Corporation (hereinafter called “the Corporation”) of the third part, WHEREAS the contractor has tendered for the construction, completion and maintenance of the works described above and his tender has been accepted by the Commissioner (with the approval of the Standing Committee/Education Committee of the Corporation NOW THIS THIS AGREEMENT WITNESSETH as follows:-

- 1) In this agreement words and expressions shall have the same meanings as are respectively assigned to them in the General Conditions of Contract for works hereinafter referred to:-
- 2) The following documents shall be deemed to form and be read and constructed as a part of this agreement viz.
 - a) The letter of Acceptance
 - b) The Bid:
 - c) Addendum to Bid; if any
 - d) Tender Document
 - e) The Bill of Quantities:
 - f) The Specification:

- g) Detailed Engineering Drawings
 - h) Standard General Conditions of Contracts (GCC)
 - i) All correspondence documents between bidder and BMC
- 3) In consideration of the payments to be made by the Commissioner to the contractor as hereinafter mentioned the contractor hereby covenants with the Commissioner to construct, complete and maintain the works in conformity in all respects with the provision of the contract.
- 4) The Commissioner hereby covenants to pay to the Contractor in consideration of the construction, completion and maintenance of the works the contract sum, at times and in the manner prescribed by the contract.

IN WITNESS WHERE OF the parties hereto have caused their respective common sealsto be herein to affixed (or have hereunto set their respective hands and seals) the day and year above written.

Signed, Sealed and delivered by the contractors

.....

.....

In the presence of

Trading under the name and style of

.....

.....

Full Name & Address

Contractors

Signed by the DMC () in the presence of

Sub. Eng. (BC)City

Asst. Eng.(BC)City

Ex. Eng. (BC)City

Dy.C.E.(BC)City

The Common seal of the Brihanmumbai Municipal Corporation was hereunto affixed on the 2024 in the presence of two members of the Standing Committee.

1.

1.

2.

2.

And in the presence of the Municipal Secretary

Municipal Secretary

ANNEXURE " A "

Name of work: Proposed works to be carried out at Annabhau Sathe Auditorium in campus of V.J.B.Udyan , Byculla in 'E'Ward on the land bearing CTS No.563(pt).Mazgoan Division in 'E' Ward .

1. The Engineer for this work: Executive Engineer(BC)City
Asst. Engineer (BC)City
Sub. Engineer (BC)City

2. Estimated cost of Tender:

Sr. No.	Description of work	Total Amount Rs.
1.	Civil & Allied Work	Rs. 2,92,73,479/- (Excluding GST)
2.	M&E Work	
3	Lift Work	
4.	Total Amount	

3. Earnest Money: Rs. 2.93 Lakhs
4. Time Period : 04 Months

Sr. No.		Total Amount Rs.
1.	Contract as a whole Period completion	
2.	Part or Groups of items	
	i)	i)
	ii)	ii)
	iii)	iii)

5. Percentage to be charged as supervision charges for the work got executed through other means 10 percent.

The "Actual cost of the work" shall mean in the case of percentage rate contracts the actual cost of the work executed at the rates as mentioned in the Contract Schedule adjusted by the Contractor's percentage rate and cost of extra and excess, but excluding the cost on account of Water Charges and Sewerage Charges if any, payable by the contractor and also excluding cost on account of price variation claims as provided in price variation clause as amended up to date.

6. In case of item rate contracts the actual cost calculated for the work executed at the rates mentioned in the contract schedule for different items including cost of excess and extra items of the work excluding the cost of water charges and sewerage charges if any, payable by the contractor and excluding cost on account of price variation claims as provided in extra excess conditions as amended up to date.
7. In case of lump sum contract the cost of the work actually carried out as per break up and programme of the work and the schedule of payment included in the contract including cost of any excess and/or extra items, of the work, excluding the cost on account of water charges and sewerage charges and also excluding cost on account of price variation claims as provided in extra excess conditions as amended up to date.

Annexure- “B”
PRE-CONTRACT INTEGRITY PACT
(On Rs. 500/- Stamp Paper)

The Bidder commits himself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of his bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commits himself to the following:-

1. The Bidder will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BMC, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the Contract.
2. The Bidder further undertakes that he has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BMC or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the Contract or any other Contract with the Government for showing or forbearing to show favour or dis favour to any person in relation to the Contract or any other Contract with the Government.
3. The Bidder will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.
4. The Bidder will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
5. The Bidder, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the BMC or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.

6. The Bidder shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information provided by the BMC as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The Bidder also undertakes to exercise due and adequate care lest any such information is divulged.
7. The Bidder commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
8. The Bidder shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.
9. The Bidder and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process. Notwithstanding anything to the contrary contained herein, the Authority may reject an Application without being liable in any manner whatsoever to the Applicant if it determines that the Applicant has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process

For the purposes of this Clause 9, the following terms shall have the meaning herein after respectively assigned to them:

- i. “fraudulent practice” means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process ;
- ii. “coercive practice” means impairing or harming or threatening to impair or harm, directly or indirectly, any person or property to influence any persons participation or action in the Bidding Process;
- iii. “undesirable practice” means (i) establishing contact with any person connected with or employed or engaged by the Authority with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest; and
- iv. “restrictive practice” means forming a cartel or arriving at any understanding or arrangement among Applicants with the objective of restricting or manipulating a full and fair competition in the Bidding Process.

Signature of Tenderer/Bidder

Annexure- “C”

(On Rs. 500/- Stamp Paper)

DECLARATION CUM INDEMNITY BOND

I, _____ of _____, do hereby declared and undertake as under.

1. I declare that I have submitted certificates as required to Executive engineer (Monitoring) at the time of registration of my firm/ company and there is no change in the contents of the certificates that are submitted at the time of registration.
2. I declare that I _____ in _____ capacity as Manager/Director/Partners/Proprietors of _____ has not been charged with any prohibitory and /or penal action such as banning (for specific time or permanent)/de-registration or any other action under the law by any Government and/or Semi Government and/or Government undertaking.
3. I declare that I have perused and examined the tender document including addendum, condition of contract, specifications, drawings, bill of quantity etc. forming part of tender and accordingly, I submit my offer to execute the work as per tender documents at the rates quoted by me in capacity as _____ of _____.
4. I further declare that if I am allotted the work and I failed to carry out the allotted work in accordance with the terms and conditions and within the time prescribed and specified, BMC is entitled to carry out the work allotted to me by any other means at my risk and cost, at any stage of the contract.
5. I also declare that I will not claim any charge/damages/compensation for non-availability of site for the contract work at any time.
6. I declare that I will positively make the arrangements of the required equipment on the day of commencement or with respect to the progress of the work in phases, as per the instructions of site in charge.

Signature of Tenderer/Bidder

BANKERS GUARANTEE IN LIEU OF CONTRACT DEPOSIT

THIS INDENTURE made this _____ day of _____ BETWEEN THE _____ BANK incorporated under the English/Indian Companies Acts and carrying on business in Mumbai (hereinafter referred to as 'the bank' which expression shall be deemed to include its successors and assigns) of the first part _____ inhabitants carrying on business at _____ in Mumbai under the style and name of Messer's _____ (hereinafter referred to as 'the consultant') of the second part Shri. _____

THE MUNICIPAL COMMISSIONER FOR GREATER MUMBAI (herein after referred to as 'the commissioner' which expression shall be deemed, also to include his successor or successors for the time being in the said office of Municipal Commissioner) of the third part and THE BRIHANMUMBAI MUNICIPAL CORPORATION (hereinafter referred to as 'the Corporation') of the fourth part WHEREAS the consultants have submitted to the Commissioner tender for the execution of the work of “ _____ ” and the terms of such tender /contract require that the consultants shall deposit with the Commissioner as /contract deposit / earnest money and/or the security a sum of Rs. _____ (Rupees _____)

AND WHEREAS if and when any such tender is accepted by the Commissioner, the contract to be entered into in furtherance thereof by the consultants will provide that such deposit shall remain with and be appropriated by the Commissioner towards the Security deposit to be taken under the contract and be redeemable by the consultants, if they shall duly and faithfully carry out the terms and provisions of such contract and shall duly satisfy all claims properly chargeable against them there under AND WHEREAS the consultants are constituents of the Bank and in order to facilitate the keeping of the accounts of the consultants, the Bank with the consent and concurrence of the consultants has requested the Commissioner to accept the undertaking of the Bank hereinafter contained, in place of the contractors depositing with the Commissioner the said sum as earnest money and /or security as aforesaid AND WHEREAS accordingly the Commissioner has agreed to accept such undertaking NOW THIS AGREEMENT WITNESSES that in consideration of the premises, the Bank at the request of the consultants (hereby testified) UNDERTAKES WITH the commissioner to pay to the commissioner upon demand in writing , whenever required by him , from time to time , so to do , a sum not exceeding in the whole

Rs. _____ (Rupees) under the terms of the said tender and /or the contract. The B.G. is valid up to _____”Not withstanding anything what has been stated above, our liability under the above guarantee is restricted to Rs. _____ Only and guarantee shall remain in force up to unless the demand or claim under this guarantee is made on us in writing on or before _____ all your right under the above guarantee shall be forfeited and we shall be released from all liabilities under the guarantee thereafter”

IN WITNESS WHEREOF

WITNESS (1) Name and address	..... . ..... .
WITNESS (2) Name and address	..... . ..... .	the duly constituted Attorney Manager
the Bank and the said Messer’s (Name of the Bank)		
WITNESS (1) Name and address	..... . ..... .
WITNESS (2) Name and address	..... . ..... .
For Messer’s address	..... . ..... .

have here into set their respective hands the day and year first above written.

The amount shall be inserted by the Guarantor, representing the Contract Deposit in Indian Rupees.

Annexure-“D”**Rate Analysis (Not applicable for this tender)**

Item Description :

Sr. No.	Description of rate analysis parameters	Unit	Quantity	Rate	Amount
1	Basic Material (Rate should be inclusive of all taxes)				
2	Machinery Hire Charges				
3	Labour Type		(Labour components)		
4	Total of all components				
5	Overhead & Profit 15% on 4				
6	Total Rate (4+5)				
7	Per unit rate				

Sign & Seal of the Tenderer

PROFORMAS:**PROFORMA- I**

The list of similar works as stated in para 'A' of Post qualification during last Ten years-

PROFORMA- I					
Sr. No.	Name of the Project	Name of the employer	Stipulated date of completion	Actual date of completion	Actual Cost of work done
1	2	3	4	5	6

NOTE:

- Scanned Attested copies of completion/performance certificates from the Engineer-in-Charge for each work should be annexed in the support of information furnished in the above proforma.
- Works shall be grouped financial year-wise.

PROFORMA- II

Yearly turnover during the last three years.

PROFORMA- II					
Sr. No.	Financial year	Annual Turnover of Civil Engineering Works	Updated value to current year	Average of last 5years	Page No.
1					
2					
3					
Total					

NOTE: The above figures shall tally with the audited balance sheets uploaded by the tenderers duly certified by Chartered Accountant.

PROFORMA- III

At least similar work, as stated in para 'A' of Post qualification,

PROFORMA- III							
Name of the Project	Name of the Employer	Cost of the Project	Date of issue of work Order	Stipulated Date of Completion	Actual Date of Completion	Actual cost of work done	Remarks explaining reasons for delay, if any
1	2	3	4	5	6	7	8

Note: Scanned Attested copies of completion/performance certificates from the Engineer-in-charge for each work should be annexed in support of information furnished in the above proforma.

PERSONNEL PROFORMA- IV

PROFORMA- IV					
Sr. No.	Post	Name (Prime Candidate / Alternate)	Qualification	Work Experience	
				No. of Years	Name of the Project
1	Principal Technical Representative				
2	Project / Site Engineer or Engineer				

NOTE: Scanned Attested copies of qualification certificates and details of work experience shall be submitted /uploaded.

MACHINERY: (for special work only)PROFORMA- V/A

PROFORMA- V/A			
Sr. No.	Equipment	Number	Owned/Leased/Assured access
1	2	3	4

PROFORMA- V/B

PROFORMA- V/B			
Sr. No.	Equipment	Number	Owned
1	2	3	4

Note:- The tenderer(s) shall furnish /upload the requisite Scanned Attested documents of ownership/leased of machineries. The undertaking from the suppliers will not be accepted.

PROFORMA - VI / A

Details of Existing Commitments and ongoing works -

PROFORMA - VI / A							
Description of work	Place	Contract No.& Date	Name & Addresses of employer	Value of Contract in Rs.	Scheduled Date of completion	Value of work remaining to be completed	Anticipated Date of completion
1	2	3	4	5	6	7	8

Note: Scanned Attested copies of completion/performance certificates from the Engineer-in- Charge for each work should be annexed in the support of information furnished in the above proforma.

PROFORMA - VI / B

Details of works for which bids are already uploaded -

PROFORMA - VI / B						
Description of Work	Place	Name & Ad-dresses of employee	Value of Contract inRs.	Time Period	Date on which decision is expected	Remarks
1	2	3	4	5	6	7

Note: Scanned Attested copies of certificates from the Engineer-in-charge for each work shall be annexed.

PROFORMA- VII

Information on Litigation History in which the applicant is involved.

PROFORMA - VII				
Other Party (/Parties)	Employee	Cause of Dispute	Amount involved	Remarks showing Present Status.
1	2	3	4	5

Note: Scanned Attested copies of completion / performance certificates from the Engineer-in- charge for each work should be annexed and uploaded.

Note: “Chapter XXI- Miscellaneous, section 171(1) of GST Act, 2017 governs the ‘AntiProfiteering Measure’ (APM).

As per the provision of this section, ‘Any reduction in rate of tax on any supply of goods or services or the benefit of input tax credit shall be passed on the recipient by way of commensurate reduction in prices’

Accordingly, the contractor should pass on the complete benefit accruing to him on account of reduced tax rate or additional input tax credit, to BMC.

Further, all the provisions of GST Act will be applicable to the tender.”

G.S.T. and other state levies/cess which are not subsumed under GST will be applicable. The tenderer shall quote inclusive of all taxes. It is clearly understood that BMC will not bear any additional liability towards payment of any Taxes & Duties. Wherever the services to be provided by the Tenderers, falls under Reverse Charge Mechanism, the Price quoted shall be exclusive of GST, but inclusive of Taxes/Duties/Cess other than GST, if any. Rates accepted by BMC shall hold good till completion of work and no additional individual claim shall be admissible on account of fluctuations in market rates; increase

in taxes/ any other levies / tolls etc. Except that payment / recovery for the overall market situation shall be made as per Price Variation and if there is any subsequent change (after submission of Bid) in rate of GST applicable on the work/service to be executed as per tender, i. e any increase will be reimbursed by BMC where as any reduction in rate of GST shall be passed on to BMC as per the provision of the GST Act.

ANNEXURE “F”
GRIEVANCE REDRESSAL MECHANISM
(To be uploaded in Packet ‘A’)

BMC has formed a Grievance Redressal Mechanism for redressal of bidder’s grievances. Any Bidder or prospective Bidder aggrieved by any decision, action or omission of the procuring entity being contrary to the provisions of the tender or any rules or guidelines issued therein, in Packet ‘A’, ‘B’ & ‘C’ can make an application for review of decision of responsiveness in Packet ‘A’, ‘B’ & ‘C’ within a period of 7 days or any such other period, as may be specified in the Bid document.

While making such an application to the procuring entity for review, aggrieved bidders or prospective bidders shall clearly specify the ground or grounds in respect of which he feels aggrieved.

Provided that after declaration of a bidder as a successful in Packet ‘A’ (General Requirements), an application for review may be filed only by a bidder who has participated in procurement proceedings and after declaration of successful bidder in Packet ‘B’ (Technical Bid), an application for review may be filed only by successful bidders of Packet ‘A’. Provided further that, an application for review of the financial bid can be submitted, by the bidder whose technical bid is found to be acceptable / responsive.

Upon receipt of such an application for review, BMC may decide whether the bid process is required to be suspended pending disposal of such review. The BMC after examining the application and the documents available to him, give such reliefs, as may be considered appropriate and communicate its decision to the Applicant and if required to other bidders or prospective bidders, as the case may be.

BMC shall deal and dispose of such application as expeditiously as possible and in any case within 10 days from the date of receipt of such application or such other period as may be specified in pre-qualification document, bidder registration document or bid documents, as the case may be.

Where BMC fails to dispose of the application within the specified period or if the bidder or prospective bidder feels aggrieved by the decision of the procuring entity, such bidder or prospective bidder may file an application for redressal before the “Internal Procurement Redressal Committee” within 7 days of the expiry of the allowed time or of the date of receipt of the decision, as the case may be. Every such application for internal redressal before the Redressal Committee shall be accompanied by fee of

Rs.25,000/- and fee shall be paid in the form of D.D. in favor of BMC.

1ST APPEAL BY THE BIDDER AGAINST THE DECISION OF C.E./HOD/ DEAN CAN BE MADE TO THE CONCERNED DMC/DIRECTOR WHO SHOULD DECIDE APPEAL IN 7 DAYS.

If not satisfied, 2nd Appeal by the bidder can be made to concerned A.M.C. for decision.

Grievance Redressal Committee (GRC) is headed by concerned D.M.C./ Director of a particular department for the first appeal/ grievances by the bidder against the decision for responsiveness / non- responsiveness in Packet 'A', Packet 'B' or Packet 'C' and if not satisfied, concerned A.M.C. will take decisions as per second appeal made by the bidder.

This Grievance Redressal Committee (GRC) will be operated through DMC (CPD) office where appeals of aggrieved bidders will be received with a fee of Rs. 25,000/- from aggrieved bidder. The necessary correspondence in respect of said applications to the aggrieved bidder & concerned department, issuing notices, arranging of Grievance Redressal Committee (GRC) with D.M.C. and further proceeding will be carried out through a registrar appointed by BMC.

No application shall be maintainable before the redressal Committee in regard to any decision of the BMC. Relating to following issues:

Determination of need of procurement the decision of whether or not to enter into negotiations. Cancellation of procurement process for certain reasons.

On receipt of recommendation of the Committee, It will be communicate his decision thereon to the Applicant within 10 days or such further time not exceeding 20 days, as may be considered necessary from the date of receipt of the recommendation and in case of non- acceptance of any recommendation, the reason of such non- acceptanceshall also be mentioned in such communication.

Additional Municipal Commissioner and/or Grievance Redressal Committee, if found, come to the conclusion that any such complaint or review is of vexatious, frivolous or malicious nature and submitted with the intention of delaying or defeating any procurement or causing loss to the procuring entity or any other bidder, then such complainant shall be punished with fine, which may extend to Five Lac rupees or two percent of the value of the procurement, whichever is higher.

Full Signature of the tenderer with
Official Seal and Address

DATA SHEET FOR Fully Automatic Glass Elevator

Sr. No.	Description	Tenderer's Specifications
1	Make of the offered Lift	
2	Model of the Lift	
3	Load	
4	Speed	
5	Rise	
6	Stop and Openings	
7	Control	
8	Power Supply	
9	Operation	
10	Machine	
11	Car size	
12	Hoist way size	
13	Car enclosure	
14	Handrails	
15	False Ceiling	
16	Flooring	
17	Car entrance	
18	Car opening	
19	Door operation	

Tenderer's Signature & Seal

SECTION-15

SPECIAL CONDITION TO CONTRACTOR

SPECIAL CONDITIONS TO CONTRACTOR

1. The work shall be carried out as per USOR-2023 and specification given intender.
2. GCC-2016 is applicable to this work.
3. The contractor shall be responsible for the care and protection of the existing systems, carpets, flooring structures, etc. Any damages to the same shall be borne by the contractor.
4. Tenderer shall get himself acquainted with the nature of work before bidding.
5. The contractor shall upload authorization letter as per Annexure-F if applicable.
6. The contractor shall conduct a drumming sound test for the provided roof sheets by spraying water, to the satisfaction of the User Department, PMC, and the Engineer in Charge.
7. Bidder shall go through BOQ, items which are not in SAP system such as magnetic locks of acoustic purpose & have to take cognizance of same during quoting the tender. No extra cost will be paid for same. All specified acoustic work shall be carried out to the satisfaction of user department ,PMC, Engineer in charge.
8. The removal and re-fixing of auditorium chairs, protection of the chairs, carpet, and provision of essential type of scaffolding during the proposed catwalk work fabrication or any internal work shall be the sole responsibility of the contractor. The bidder shall account for these responsibilities when quoting for the tender. No additional payments will be entertained for these tasks.
9. The provided lighting system and sound system shall be synchronized with the existing systems to the satisfaction of the User Department, PMC, and the Engineer in Charge.
10. The successful contractor is expected to supply and install items of International

- Standards with the latest technology, which will be compatible with the existing system and meet the satisfaction of the PMC and the User Department.
11. Manufacturer / Bidder should submit all samples on request of Engineer in charge/PMC/User department.
 12. The stage illumination/ lighting should not be annoying/disturbing. It should be pleasant and as per theater norms to the satisfaction of Engineer in charge/PMC/User department.
 13. Any minor work not specified in the scope/BOQ/schedule, but required for satisfactory/successful commissioning of entire work, shall deem to consider in the scope of work. The bidder should quote accordingly.
 14. The successful contractor shall ensure that any and all materials are inspected and approved by the PMC and User Department prior to the execution of work.
 15. The work shall be carried out with good workmanship following standard engineering practice.
 16. The sole responsibility for liaising with different utility departments and addressing related issues, as well as obtaining permissions, NOCs, and completion certificates from the relevant departments, lies with the contractor. However, the necessary recommendatory letters will be provided by the BMC.
 17. The contractor shall provide "Identity Card" to all the work force at site.
 18. The successful contractors shall take utmost care not to cause any nuisance due to noise, welding, operations etc. All the proper precautions shall be taken by them in this respect.
 19. If any DAMAGE caused to the M.C.G.M properties, it shall be made good/reinstated by the successful contractor at his risk and cost.
 20. The successful contractor shall take all necessary measures to ensure safety

- during the execution of the work. Required safety gear shall be provided to all workers.
21. All the materials, tools and equipment's required for executing the work shall be arranged by successful contractor at his own.
 22. The contractor shall not disturb the existing sound /electrical /any system while providing new service points/system.
 23. If any discrepancies are observed in executing the work, the same shall be rectified free of cost by the contractor in consultation with site Engineer.
 24. The contractor shall note that, all the items and works which are required for satisfactory completion and guaranteed performance of the system / auditorium projects are deemed to be included in the offer and no extra cost will be paid by BMC
 25. BMC will not be responsible for any accident / hazard caused to the person of the contractor while carrying out the work.
 26. All as build drawing of all executed services shall be provided by contractor in three sets to BMC as well as CAD soft copies of same.
 27. Successful contractor shall be co-ordination with ongoing work contractor of maintenance work to avoid in conflict /disturbance in existing system.
 28. Removal of debris is sole responsibility of contractor.
 29. Non serviceable material shall be handed over to user department.
 30. The estimate is based on the rates previously approved fair items rates. Bidder shall consider the same while quoting the tender.
 31. Location and feasibility of lift on site is checked by PMC and user department, however same can be change on basis of any site constraint observed and subject to approval of plans, drawings from competent authority. In such scenario, may need to operate required items from USOR 2023 during the actual execution work. The contractor shall strictly adhere to the

decisions of the Engineer in charge, User Department, and PMC. The bidder shall consider this condition while quoting the tender.

32. The rate of few items included in the estimate are based on estimate of fair items is based on the base rates of previously approved fair items. Bidder shall consider the same while quoting the tender.