E TENDER NO.: 2026_MCGM_1347792_1

SUBJECT: SITC of Spare 10 MVA 100/3.6 kV Transformer with complete bay & allied work at 100 KV Substation, Pise.

WEBSITE: www.mahatenders.gov.in

OFFICE OF: Executive Engineer

(Mech. & Elect.) Pise

At Pise, Post Amne

Tal. Bhiwandi

Dist. Thane 421 302

Email: eemnepippc.he@mcgm.gov.in

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SECTION-1

E-TENDER NOTICE

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BRIHANMUMBAI MUNICIPAL CORPORATION
Hydraulic Engineer's Department

AMC/P/4397 Dated 28.09.2026

E-TENDER NOTICE

Subject: SITC of Spare 10 MVA 100/3.6 kV Transformer with complete bay & allied work at 100 KV Substation, Pise.

The BRIHANMUMBAI MUNICIPAL CORPORATION (BMC) invites e-tender on Item Rate basis 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, (BMC) in Class "A" 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 BMC will have to apply for registering their firm within three month 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 application form can be downloaded from e-procurement system of Government of Maharashtra (Mahatenders) (http://mahatenders.gov.in). The applicants not registered with BMC are mandated to get registered (Vendor Registration) with BMC for e-tendering process & obtain login credentials to participate in the online bidding process. (The application form can be downloaded from BMC's portal (Mahatenders) (http://mahatenders.gov.in) on payment of **Rs.1000+18% GST**.

i) To download the application form, for those applicants not having vendor registration, need to apply first for vendor registration at the office of Account Officer (FAR), 3rd floor, Municipal Headquarter. **(Note- Online vendor registration is available on BMC's portal** http://portal.mcgm.gov.in**)**

ii) Followed by SRM login ID and password to be obtained from Central Purchase Department (CPD), Office at Byculla, Bakariadda, Mumbai

iii) For e-Tendering registration, enrolment for digital signature certificates and user manual, please refer to respective links provided in 'Tenders' tab. Vendors can get digital signature

from any one of the Certifying Authorities (CA's) licensed by controller of certifying authorities namely, Safes crypt, IDRBT, National informatics center, TCS, CUSTOMS, MTNL, GNFC and e- Mudhra CA.

Name & Location of Work	Contract period
SITC of Spare 10 MVA 100/3.6 kV Transformer with complete bay & allied work at 100 KV Substation, Pise. **Tender No.2026_MCGM_1347792_1**	**18 Months** (Excluding Monsoon)

While submitting duly filled tender document on mahatender, bidder needs to pay total EMD amounting to Rs.14,89,520/- (Rs. Fourteen Lakh Eighty-nine Thousand Five Hundred Twenty Only.) online through https://mahatenders.gov.in. EMD is refundable in accordance to the relevant clause of bid document, except in the case of the selected Bidder who's 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 tender is available on e-Procurement System of Government of Maharashtra 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 opening of bids, in the office of Executive Engineer (Mech. & Elect.), Pise. 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 BMC Portal. (http://portal.BMC.gov.in)

The Applicants interested for the above referred works may contact the Executive Engineer (Pise Complex) at the following address on any working day during office hours.

Office of: Executive Engineer
(Mech. & Elect.) Pise
At Pise, Post Amne

Tal. Bhiwandi
Dist. Thane 421 302
Email: eemnepippc.he@mcgm.gov.in

The applicants may wish to visit the site under reference located **at Pise, Post: Amne, Tal: Bhiwandi, Dist: Thane** and can collect the information of the present status from the department who have invited the bids.

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 e-procurement system of Government of Maharashtra. (https://mahatenders.gov.in).

Bidders are also advised to refer "Bidders Manual Kit" available at https://mahatenders.gov.in/nicgep/app?page=BiddersManualKit&service=page for further details about the e-tendering process.

Any help, in the e-Tendering process, can be availed by dialing help-desk number 022-22046934/22837339 from 11.30 AM to 5.00 PM on all working days. Email: support-eproc@nic.in

SPECIAL NOTE:

TENDERERS ARE REQUESTED TO GO THROUGH THE e-TENDER GUIDELINES ON NIC PORTAL (https://mahatenders.gov.in). For registration, enrolment for digital signature certificate & user manual, please refer to respective links provided in e-tendering tab. The vendors can get digital signature from any one of the Certifying Authorities (CA's) licensed by the Controller of Certifying Authorities namely Safes crypt, IDRBT, National Informatics Centre, TCS, Customs, MTNL, GNFC and e-Mudhra.

Sd/-
E.E.(M&E)PISE

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Header Data

Tender Document No.	**2026_MCGM_1347792_1**
Name of Organization	BRIHANMUMBAI MUNICIPAL CORPORATION
Subject	SITC of Spare 10 MVA 100/3.6 kV Transformer with complete bay & allied work at 100 KV Substation, Pise.
Tender Fee	Rs.23,560/- (Rs. 19,965/- + 18% GST)
Bid Security Deposit/ EMD	Rs.14,89,520/- (Rs. Fourteen Lakh Eighty-nine Thousand Five Hundred Twenty Only.) Pay online to MAHAPORTAL
Date of issue and sale of tender	29.10.2026 at 11.00 am
Last date & time for sale of tender	26.11.2026 at 04.00 pm
Submission of Packet A, B & Packet C (Online) & Receipt of Bid Security Deposit.	26.11.2026 up to 04.00 pm
Pre-Bid Meeting	16.11.2026 at 12.30 pm at HE's Office Worli
Opening of Packet 'A'	27.11.2026 at 04.01 pm
Opening of Packet 'B'	27.112026 at 04.10 pm
Opening of Packet 'C'	04.12.2026 at 04.00 pm
Website	https://mahatenders.gov.in
Address for communication	Executive Engineer (Mech. & Elect.) Pise At Pise, Post Amne Tal. Bhiwandi Dist. Thane 421 302 Email: eemnepippc.he@mcgm.gov.in
Venue for opening of bid	**On line in E.E.(M&E) Pise's office**
Note: As per Circular No. CA/FRG/15 dtd. 20.03.2026, all the tenderers shall have to pay the Tender fee with GST online on https://mahatenders.gov.in	

This tender document is not transferable.

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

Sd/-
E.E.(M&E) PISE

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SECTION-2

ELIGIBILITY CRITERIA

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ELIGIBILITY CRITERIA

A) Technical Capacity: (Non-Curable Documents)

1. Tenderer shall be Electrical Contractor having Electrical Contractor's License issued by Govt. of Maharashtra.

AND

2. The tenderer(s) in their own name should have satisfactorily executed the work of similar nature in BMC /Semi Govt. /Govt. / Public Sector Organizations during **last seven (7) year's** 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)

a) Three similar completed works each of value not less than the Rs.4,46,85,600/- **OR**

b) Two similar completed works each of value not less than the Rs.5,95,80,800/- **OR**

c) One similar completed work of value equal and or not less than Rs.8,93,71,200/-

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 last date of receipt of applications for tenders.

1.2 Financial Capacity: (Non-Curable Documents)

Achieved an average annual financial turnover as certified by 'Chartered Accountant' equal to Rs.4,46,85,600/- 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 Account.

The turnover can be enhanced by 10% every year to bring the present level.

Documentary evidence shall be submitted.

Similar Experience: (Non-Curable Documents)

For assessing the technical capacity of Regular, Routine and Maintenance works; Similar work shall mean, tenderer shall have carried out the work of SITC / Extension of Bay of minimum 100 kV outdoor Substation OR SITC of 10MVA or above capacity Power Transformer in minimum 100kV outdoor Substation in BMC /Semi Govt. /Govt. & Public Sector Organizations.

Past performance certificates, including the work order number and date, cost of the work, contract period, etc. shall be annexed by the bidder while submitting the offer.

C) Bid Capacity:

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

Where,

A = Maximum value of Engineering 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. 7 months = 7/12 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.**

SECTION-3

DISCLAIMER

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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 Municipal Corporation of Greater Mumbai (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 otherwise 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 Municipal Corporation of Greater Mumbai (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

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INTRODUCTION

1. Background:

The Brihanmumbai Municipal Corporation (BMC) covers an area of 437.71sq.kms.with a population of **1.24 Crores as per census of 2011**. The metropolis accounts 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 cause 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 Brihanmumbai.

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 Slaughter Houses.

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

SCOPE OF WORK: BMC is primarily an organization, which in the interest of citizens and with the speed of urbanization deals with the variety of the infrastructure services and delivered to the public by different departments like Water Supply Projects, Sewerage Projects, Hydraulics, Storm Water Drain/Roads and bridges and Building Construction etc.

The scope of work for 'SITC of Spare 10 MVA 100/3.6 kV Transformer with complete bay and allied work' includes design, supply, erection, testing, and commissioning of all equipment, associated electrical/mechanical/civil works, protection/control integration with existing Substation and Pumping Station Automation Systems, and modification of existing Substation and Pumping Station schematics.

1. Design & Engineering

- Site survey.
- Preparation of layout drawings, foundation details, and electrical schematics.
- Relay setting calculations, protection coordination study, and structural design.

- Obtaining necessary permissions from Govt. authorities.

2. Supply, Installation, Testing & Commissioning:

- SITC of 10 MVA 100/3.6 kV Transformer with NGR, RTCC and other accessories.
- SITC of NIFPS for 10 MVA Transformer.
- SITC of 145 kV SF6 Circuit Breaker with breaker health monitoring system (BHMS).
- SITC of 400 Sq. mm. 3 Core Aluminium round GI armoured XLPE cable.
- SITC of 145 kV Current Transformers (CTs)
- SITC of 145 kV Isolators.
- SITC of 96 kV Lightning/Surge Arresters.
- SITC of Busbars, clamps, connectors, and power/control cables.
- SITC of Shield Pole with Shield wire, Mast Light Poles, Post Top Lanterns etc.
- SITC of Earthing system and its integration with existing substation earthing system.
- SITC of Galvanized steel support structures for all bay equipment as per site requirement.
- SITC of GI Ladder Type cable tray with all necessary accessories and cable trench covers as per site requirement
- SITC of Duplex type Control & Relay Panel for Transformer.
- SITC of 3.3 kV Incomer VCB, Bus coupler VCB & Bus PT Panel at Pumping Station.
- Supply of 03 Nos. of 145 kV Current Transformer as spare.

3. Foundation Work at Substation:

- Foundation of 10 MVA Power Transformer, 145 kV SF6 circuit breaker, Shield Pole, Lighting Mast & Post Top Lanterns and GI structures as per site requirement.
- Construction of new cable trenches (with GI cable tray & FRP trench cover) and expansion of existing cable trenches (with GI cable trays & FRP trench cover for extended trenches) wherever necessary.
- Transformer bay earthing with required number of earth pits and earthing strips and its integration with existing earthing system.
- Gravel filling of complete bay.

4. Integration with Existing Substation

- **Protection Integration Substation Control Room:** Integrating new Control &

Relay Panel with existing Control & Relay Panels and Substation automation system.

- **Protection Integration Pumping Station:** Integrating new 3.3 kV I/C, B/C and Bus PT panels with existing Pumping station 3.3 kV automation system.

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SECTION-5

E-TENDRING ONLINE SUBMISSION PROCESS

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E-TENDERING ONLINE SUBMISSION PROCESS

1. All the tender notices including e-Tender notices will be published on NIC's Mahatender Portal https://mahatender.gov.in/nicgep/app

2. All the information documents are published under the NIC's Mahatender Portal.

3. All interested vendors are required to be registered with NIC's Mahatender Portal for e-Tendering process. Vendors not registered with NIS's Mahatender Portal can apply online by clicking the online registration section of NIC's Mahatender Portal.
   https://mahatenders.gov.in/nicgep/app?component=%24WebHomeBorder.%24WebRightMenu.%24DirectLink&page=Home&service=direct&session=T

4. Manual offers sent by post/Fax or in person will not be accepted against e-Tenders even if these are submitted on the Firm's letter head and received in time. All such manual offers shall be considered as invalid offers and shall be rejected summarily without any consideration.

5. Please read the tender document carefully "Instructions and Articles of Agreement" for supply of general items. All documents that are required to be submitted as part of eligible & technical bid, need to be uploaded in the Packets provided for this purpose and commercial bid need to be filled online.

6. This document (Instructions to vendors) and the 'Articles of Agreement' document which are available in the tender document make part of all tender documents unless stated otherwise in the tender document.

7. Affixing of digital signature for the bid document while submitting the bid, shall be deemed to mean acceptance of the terms and conditions contained in the tender document as well as confirmation of the bid/bids offered by the vendor which shall include acceptance of special Directions/ terms and conditions if any, incorporated.

8. All the documents and data submitted by vendors online shall be digitally signed. The system will prompt for digital signature certificate. It is mandatory for the vendors willing to participate in tender process to procure digital signature certificate of class-2/ class-3 and Company Type.

9. Certifying authorities (CA) in India. However, for the convenience of the vendors, a team from one of the certifying authorities is made available to help them for obtaining digital Signature certificates. Interested vendors may approach help desk for details.

10. The browser settings required for digitally signing the uploaded documents are listed in the Link “Site Compatibility” available on Mahatender Portal.

11. In order to participate in the tender process, the registered vendors need to follow the steps given in the section “Guidelines for hassle free Bid submission” and “Bidders Manual Kit-OpenSource Software Link” available on Mahatender portal.

    a. Open the e-Tendering application by clicking the link available on https://www.mahatenders.gov.in

    b. Make the Browser Settings as per the guidance available in “Site Compatibility” section. Carry out the necessary settings and root certificates installation as mentioned in the document. Vendors to note that the computer user should have administrative rights to the computer to be able to work with e-Tendering application.

    c. Login to the application with your credentials and follow the instructions given in the document “User Manual for Vendors- Bidding Process“ which is available in the “For Partners” section of Mahatender Portal.

    d. As per Circular no. CA/FRG/09 Dated 04.10.2024, all the tenderers shall have to pay the tender fee with GST. It is to be paid on line on Mahatender Portal.

    e. Pay EMD and other charges, where applicable, as per the instructions given in the Tender Notice and/or Tender Document.

    f. Upload the administrative & technical bid documents. System will prompt for digital signature certificate while uploading the document.

    g. Ensure that documents are uploaded properly by downloading them after uploading.

    h. Submitting the commercial bid by filling in the values on the screen. All the inputs given on this screen need to be digitally signed.

    i. The administrative, technical and commercial bids can be submitted only online on or before the due date and due time mentioned for submission of bids.

    j. The bids can be modified till the end date and time for bid submission. However, if a new version of a document is to be uploaded, please ensure to delete the old version.

k. Ensure that bid is submitted by ensuring that the "status" of the bid in the initial bids listing screen is "Bid submitted."

12. Vendors should ensure to submit their bids well in advance before the due date and due time. Vendors trying to submit the bid at last moment just before due date and due time and failing to do so due to system problems at their end, internet problems, User Id locking problems

etc. shall note that no complaints in this regard will be entertained.

13. It is the responsibility of the vendors to maintain their computers, which are used for submitting their bids, free of viruses, all types of malware etc. by installing appropriate anti-virus software and regularly updating the same with virus free signatures etc. Vendors should scan all the documents before uploading the same.

14. The administrative, technical and commercial evaluation documents will be available for all the participating vendors after completion of the evaluation.

15. Additional information can be availed by referring to FAQs in the e-Procurement section of Mahatender portal.

16. For any help, in the e-Tendering process, can be availed by dialing help-desk number 022-24811275/76 (BMC IT Cell) from 10.30AM to 6.00PM on all working days of BMC.

17. Email / Tele Support - Working hours 10.00 AM to 6.00 PM (Monday to Friday) NOTE- Support will not be available on Public Holiday & Saturday-Sunday

SPECIAL NOTE:

In order to participate in the tender process, the registered vendors need to follow the steps given in the section "Guidelines for hassle free Bid submission" and "Bidders Manual Kit -Opensource Software Link" available on Mahatender portal

For registration, enrolment for digital signature certificate & user manual, please refer to respective links provided in e-tendering tab. The vendors can get digital signature from anyone of the Certifying Authorities (CA"s) licensed by the Controller of Certifying Authorities namely Safes crypt, IDRBT, National Informatics Centre, TCS, Customs, MTNL, GNFC and e-Mudhra.

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SECTION-6

INSTRUCTIONS TO APPLICANTS

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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 Brihanmumbai Municipal Corporation (BMC) 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 Brihanmumbai Municipal Corporation (BMC) in **Class 'A' 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 BMC 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 fulfil the following conditions of eligibility:

ELIGIBILITY CRITERIA

A) 1.1 Technical Capacity: (Non-Curable Documents)

1)Tenderer shall be Electrical Contractor having Electrical Contractor's License issued by Govt. of Maharashtra.

AND

2)The tenderer(s) in their own name should have satisfactorily executed the work of similar nature in BMC /Semi Govt. /Govt. / Public Sector Organizations during **last seven (7) year's** 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)

a) Three similar completed works each of value not less than the Rs.4,46,85,600/- **OR**

b) Two similar completed works each of value not less than the Rs.5,95,80,800/- **OR**

c) One similar completed work of value equal and or not less than Rs.8,93,71,200/-

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 last date of receipt of applications for tenders.

1.2 Financial Capacity: (Non-Curable Documents)

Achieved an average annual financial turnover as certified by 'Chartered Accountant' equal to Rs.4,46,85,600/- 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 Account.

The turnover can be enhanced by 10% every year to bring the present level.

Documentary evidence shall be submitted.

B) Similar Experience: (Non-Curable Documents)

For assessing the technical capacity of Regular, Routine and Maintenance works; Similar work shall mean, tenderer shall have carried out the work of SITC / Extension of Bay of minimum 100 kV outdoor Substation OR SITC of 10MVA or above capacity Power Transformer in minimum 100kV outdoor Substation in BMC /Semi Govt. /Govt. & Public Sector Organizations.

Past performance certificates, including the work order number and date, cost of the work, contract period, etc. shall be annexed by the bidder while submitting the offer.

C) Bid Capacity:

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

Where,

A = Maximum value of Engineering 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. 7 months = 7/12 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.**

Equipment Capabilities as required for this work:

~~1) Regular and Routine works:~~

~~The successful bidder will 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. The successful bidder and, to that effect he will ensure commitment 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.~~

2)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.

Note:

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

E. Technical Staff as required for this work:

The contractor and/or its managerial staff should have qualification/experience appropriate to the function they fulfil. 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 of working on similar nature of projects.

For fixing requirement of Technical Staff as required for this work.

General Guidelines for Fixing Requirement of Technical Staff

Cost of work (Rs. In Crores)	Requirement of Technical Staff		Minimum Experience (year)	Designation
	Qualification	Number		
10 to 20	i)Project Manager with degree in corresponding discipline of Engineering	1	10	Principal Technical Representative
	ii)Graduate Engineer	1	5	Technical Representative
	iii) Graduate Engineer or Diploma Engineer	2 2	2 5	Project/Site Engineer and Project Planning/ billing Engineer
5 to10	i) Graduate Engineer	1	5	Principal Technical Representative
	ii) Graduate Engineer or Diploma Engineer	2 2	2 5	Project/Site Engineer

Up to 1.5	1. Graduate Engineer or 2. Diploma Engineer	1 1	2 5	Principal Technical Representative \ Project / Site Engineer / Billing Engineer

Note:- 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 rate

Sr. No.	Qualification	Experience	Rate of recovery
1	**Project Manager with degree**	**10**	**Rs.30,000/- p.m.**
2	**Graduate Engineer**	**5**	**Rs.25,000/- p.m.**
3	**Graduate Engineer**	**2**	**Rs.15,000/- p.m.**
4	**Project / Site Engineer / Billing Engineer**	**5**	**Rs.15,000/- p.m.**

F. TIME PERIOD OF THE PROJECT:

Entire project should be completed and delivered within **Eighteen months from date of award of contract. (Excluding Monsoon)**

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 - 84 of Standard General Conditions of Contract.

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

~~¼ of the work in ¼ of the time~~

~~½ of the work in ½ 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 **Eighteen Months from date of award of contract. (Excluding Monsoon)**

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 5000/- 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.

I. 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 owning 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 contractors 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 purchase or procured any materials or entered in to 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 attempt so to do, or become insolvent or commence any proceeding to get himself adjudicated and insolvent or make any composition

with his creditors, or attempt 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 ensure 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.

 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 of Rs.08.00 Lakh** as governed by Registration Rules in force for respective Class of Contractor for Civil and M&E works**.**

c)A document in support of Registration under Maharashtra 'GST' Act 2017. GST Registration Certificate in Maharashtra those not registered in Maharashtra shall submit an undertaking to the effect that if they are successful tenderer, they shall submit GST 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 duly registered with Chief Accountant (Treasury) of BMC.

f) Affidavit for best price as per enclosed format.

g) No litigation history undertaking.

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

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 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 – B

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

a) All relevant documents as stated in eligibility criteria. The list of similar type of works successfully completed during the last seven years in prescribed proforma, in the role of prime contractor. Information furnished in the prescribed proforma (Proforma-I) shall be supported by the certificate duly self-attested. Documents stating that it has successfully completed during the last seven years at least one contract of similar works as stated in eligibility criteria.

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) Regular and Routine works: (Not Applicable) The successful bidder shall 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. The successful bidder and, to that effect he will ensure commitment 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.

Note:
Insistence of availability of equipment's / plants at a particular distance from site should not be made in the tender document.

ii) 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 shall 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.

iii) Special Works: (**Not applicable)** The concerned Ch. 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.

iv) 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.

v) The irrevocable undertaking on Rs 500/- stamp paper as per the proforma annexed.

vi) The undertaking of Rs.500/- stamp paper as per the proforma annexed in 'Annexure B & C'

vii) Tenderer shall submit the undertaking stating that he will submit labour license certificate from office of labour commissioner after issue of work order & before commencing the work if the work is allotted to him (The Undertaking on Rs 500/- stamp paper).

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

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.

Note:

i. The Electrical / Mechanical work shall be got carried out by the civil contractors through the contractors registered with BMC 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.

ii. 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.

iii. 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.

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

Tenderer shall submit the price bid in packet 'C' by filling data in 'Financial' Packet during the submission of the bid. 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.

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 E.M.D. online through https://mahatenders.gov.in
- 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 of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required Security Deposits.
- Except successful bidder all other unsuccessful bidders' 100% EMD paid online will be refunded automatically.
- The Bid security of successful bidder will be discharged when the bidder has signed the agreement and /or furnish the required Security Deposits as elaborated in Standard Bid Document.

 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.

c) If bidder submits misleading information and non-workable rate analysis

In case of nonworkable rate analysis and misleading information submitted by the bidder, EMD shall be forfeited and bid will be rejected.

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.If the bidder is found non-responsive after scrutiny of packet A/B, in such circumstances, the bidder will be made non-responsive and financial packet 'C' of non-responsive bidder will not be opened, however there will not be any forfeiture of EMD

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. Goods and Services Tax Registration Certificate (GST)

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

v. Partnership Deed and any other documents

vi. Undertakings as mentioned in the tender document.

vii. Wrong calculation of Bid Capacity,

Note:

Maximum 5 shortfalls of curable detects shall be allowed and in case, curable defects are not compiled by bidder within given time period, the bidder shall be treated as 'Non-Responsive' & such cases 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/deregistration, etc. shall be taken by Registration Cell with due approval of the concerned AMC.

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

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

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

c. No proper submission of experience certificates and other documents, etc

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 re-quest 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 results 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 accounts of different reasons for 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 conceived so as to constitute fraud, commencement of the Defect Liability Period may be delayed. The decided period may be delayed until discover actually occurs on at least the defect could have been discovered with reasonable diligence, whichever is earlier.

The DLP shall be 3 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 carryout 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 engineer is done.

During the Defects Liability Period (DLP), the completed work shall be periodically inspected by the site staff along with the contractor and defects noticed, if any shall be got rectified immediately from the contractor as per provision of contract. The above compliance report shall be mandatory prerequisite before releasing the deposit/retention money of the work. The concern Account Officer shall confirm in this regards. Alternatively, the inspection of DLP roads during DLP period can also be entrusted to contractor's engineer and modality can be decided by the user department and accordingly, there can be tender condition.

SECURITY DEPOSIT AND PERFORMANCE GUARANTEE

A. Security Deposit

The security deposit shall mean and comprise of

I) Contract Deposit and

II) Retention Money. **(Not Applicable)**

Contract Deposit – The successful tenderer, 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.

The said contract deposit shall be paid in the form of Demand Draft (D.D.) or online.

II) **Retention Money** – **(Not Applicable)** The contractor shall pay the retention money an amount equal to **fifteen (15)** percent of the Contract Sum which will be recovered from the contractors every bill i.e. interim / running / final bill.-The clause of retention money will not be applicable to M. & E. Department.

B. Additional Security Deposit:

Rebate quoted by contractor	ASD Applicable
Up to 12% Rebate	No ASD
12.01% to 20% Rebate	1% of Estimated cost for each percentage and part thereof above 12% rebate. For e.g. :- Rebate quoted (-)18.016% ASD = (18.06 – 12) X 1% X Estimated Cost
20.01% rebate & above	1% of Estimated cost for each percentage and part thereof above 12% rebate up to 20% rebate (i.e.8%) + 2% extra for each percentage and part thereof over and above 20% rebate. For e.g. :- Rebate quoted (-)24.70% ASD = (8% + [(24.70%-20%) X 2]) X Estimated Cost

The additional security deposit shall be applicable as under:

The ASD is to be submitted within 15 working days after issue of LOA in the form of Demand Draft at the CFC counter and submit co0py of the receipt to the concerned HOD. If the requisite ASD is not submitted within 15 working days after issue of LOA 10% EMD shall be forfeited. Further, if requisite ASD is not submitted within 30 working days after issue of LOA, 100% EMD shall be forfeited and the bidder/company shall be debarred for a period of two years. Also if any Director/Partner of such company is functioning as Director/Partner in any other company, that company shall also be liable for debarment for two years. Further the work allotted will be terminated/revoked.

C. Performance Guarantee (Not Applicable)

The successful tenderer, 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%	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 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 f in the prescribed form given in Annexure.

Performance Guarantee is 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 condition regarding above in bid document and e-tender notice.~~

D. Refund of Security Deposit

I. Refund of Contract Deposit

The Contract Deposit shall be released within 30 days after completion of 3rd year of DLP (in case of 5 years DLP) and after issue of 'Defect Liability Certificate' (in case of 1 or 2 or 3 years 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 **(Not Applicable)**

The Retention Money will be refunded after completion of defect liability period and after issue of 'Defect Liability Certificate" (in case of 1 or 2 or 3 or 5 years DLP) provided that the Engineer is satisfied that there is no demand outstanding against the Contractor. In the event of different Defect Liability Periods have been specified or become applicable to different sections or part of the Permanent Works, the said moneys will be released within 30 days on expiration of such Defect Liability Periods. 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.

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 completed works having separate WBS element, only such portion shall be considered for payment to the Contractor.

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

Successful tender shall pay the Legal Charges +Stationary charges as per modified Circular no 26206 dated 31.08.2023 of legal dept (effective from 01.04.2023). additional18 % GST will be applicable.

Sr. No.	Contract Value in Rs.	Legal + Stationery Charges Rs.
1.	Up to Rs.50,000/-	Nil
2.	From 50,001/- to 1,00,00,000/-	0.10% of contract cost, rounded to the next 100 + 18 % GST (Minimum Rs 1000/- & Maximum Rs 10,000/-) + 18% GST
3.	From 1,00,00,001/- to 10,00,00,000	Contract value UP to Rs.1,00,00,000/- Rs 10,000/- + 0.05% of contract cost above Rs 1,00,00,001/- rounded to next 100 + 18% GST
4.	₹10,00,00,001 to further Contract Amount	Contract value up to Rs.10,00,00,000/- Rs.55,000/- + 0.01% of the remaining Contract Amount above Rs.10,00,00,000/- rounded to next 100 + 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: - The successful bidder shall pay the stamp duty on the contract for preparation of the contract agreement. The stamp duty shall be as under:

If the amount of the value set forth in such contract does not exceed Rs. Five Lakh then, Rs. Five Hundred stamp duty shall be paid by the successful bidder. If contract cost exceeds Rs. Five lakh up to Rs Ten Lakh then, Five hundred rupees plus 0.3% of cost above Rs.5,00,000/- subject to the maximum of Rupees twentyfive lakh. Above Rs. Ten Lakh Rs. 500 plus 0.3% on amount above Five lakh subject to the maximum of Rupees twentyfive lakh.

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 duties 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 exceeds Rs. Five Lakh	Five Hundred rupees stamp duty
b	Where it exceeds Rupees Five lakh up to Rs. Ten lakh	Five hundred rupees plus 0.3% of cost above Rs. Five Lakh subject to the maximum of Rs. Twenty five Lakh.
c	Above Rs. Ten Lakh	Five hundred rupees plus 0.3% of cost above Rs. Five Lakh subject to the maximum of Rs. Twenty five Lakh.

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.

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 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 **eemnepippc.he@mcgm.gov.in**. The subject shall clearly bear the following identification/ title: "Queries/ Request for Additional Information: TENDER for

"SITC of Spare 10 MVA 100/3.6 kV Transformer with complete bay & allied work at 100 KV Substation, Pise."

Any changes in mail ID will be intimated on the portal.

3. In case of Equal Percentage 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 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 percentage of lowest bidders is obtained even after re-quoting, then the successful bidder will be decided by lottery system by concerned Ch. Eng.

The bidder shall need to submit the additional ASD if applicable within 7 days after receipt of notification issued by concerned Chief Engineer.

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

Note: As per Circular no. CA/FRG/15 dtd. 20.03.2026, all the tenderers shall have to pay the tender fee with GST. It is to be paid online on Mahaportal.

SECTION 7

SCOPE OF WORK

Detail Scope of work is mentioned in Section – 10 Specifications

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SECTION 8

BILL OF QUANTITIES

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PACKET "C"

Subject: SITC of spare 10 MVA 100/3.6 kV Transformer with complete bay & allied work at 100 KV Substation, Pise.

BILL OF QUANTIY

Sr. No.	Description	Qty	Rate	Amount
1	SITC of 10 MVA 100 / 3.6 kV Power Transformer, NGR, RTCC Panel and all accessories, NIFPS, Soak Pit & foundation as per relevant IS, Control & Relay Panel (Duplex Type) and allied work.	1 Job		
2	SITC of 145kV SF6 Circuit Breaker, SITC of Busbar, Clamps as per site requirement.	1 Job		
3	SITC of 145 kV Bus GOD and Allied Works	2 Nos		
4	SITC of Bus Post Insulator, 145kV Transformer GOD, Current Transformer, Lightning/Surge Arrestor, Shield Pole & Shield Wire, Mast Light Pole, Earthing System (as per requirement), and Allied Works including supply of 3 CTs as spare.	1 Job		
5	SITC of GI structures for all bay equipment's & all necessary allied work.	1 Job		
6	Supply & installation of cable tray in existing cable trench wherever required, construction of new cable trenches as required with cable tray & trench covers and allied work.	1 Job		
7	SITC of 3.3 kV 2000A I/C VCB, 2000A B/C VCB & Bus PT panel & its integration with existing 3.3 kV system at pumping Station & supply laying & termination of 3.3 kV 3 Core, 400 Sq. mm. cable from Transformer to 3.3 kV I/C and allied work.	1 Job		
8	Carryout all type of Civil Work necessary for completion of the subject work. (e.g. Mapping- Measurements, Excavation, Patching, Levelling, and Reinforcement of area along with Soling, Refurbishment of Existing Fencing with Barbed Wires and Civil Foundation and Allied Works. Liaisoning of various statutory authorities including tree cutting permission, PWD authority etc.)	1 Job		
9	TOTAL (EXCLUDING GST)			

Note:

Tenderer shall submit the price bid in packet 'C' by filling data in 'Financial' Packet during the submission of the bid.

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.

SECTION 9

GENERAL CONDITIONS OF CONTRACT

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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 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 there-from 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 lumpsum 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.

Drawings 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 Brihanmumbai Municipal Corporation / Municipal Commissioner for Brihanmumbai, 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 Brihanmumbai 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 does 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

4.1 The Engineer, with the approval of the Employer, may delegate any of his duties and responsibilities to other 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. Subcontracting

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 sub contracting 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 sub-contract the whole of the Works.

b. The permitted subletting of work by the Contractor shall not establish any contractual relation-ship 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 Gazetted 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 inter-relationship 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 back ground.

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 of 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 in 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 may be 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 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 totalling 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 workman like 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 (Not applicable)

~~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 a7 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 right to inspect at any stage and reject the concrete if he is not satisfied about 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 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 chalan 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 contactor 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: (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 –~~

~~1. Set of Sieves as per I.R.C. /I.S.~~
~~2. Compressive Testing Machine (For new works)~~
~~3. Oven, Electrically Operated~~
~~4. Weighing Balance (20 kg capacity)~~
~~5. 3 m straight edge~~
~~6. Sieve shaker~~
~~7. First Aid Box~~
~~8. Measuring Jar (for silt content)~~
~~9. Other Machines/apparatus as may be directed by the Engineer~~
~~10. Vernier Caliber~~
~~11. Level / Theodolite~~

~~All the test records shall be maintained in the site office and made available as and when required. The laboratory must be established within 15 days from the date of receipt of the orders from Engineer In charge. On failure to do so, a penalty of Rs 1000/- per day shall be imposed.~~

~~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) The Engineer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and ends after five years. The Defects Liability 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

32. Variations (Not Applicable)

~~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.~~

33. Payments for Variations (Not Applicable)

~~33.1 If rates for Variation items are specified in the Bill of Quantities, the Contractor shall carry out such work at the same rate.~~

~~33.2 The rate for Extra/Excess shall be governed by clause 10.A of Standard General Condition of Contract~~

34. Cash Flow Forecasts

~~When the Programme is updated, the Contractor shall provide the Engineer with an updated cash flow forecast.~~

35. 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 10 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 14 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.

36. Payments

36.1 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 15 days of the date of each certificate.

36.2 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.

36.3 ~~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 unskilful 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.

37. 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.

38. Tax

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 claimed 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.

"Chapter XXI- Miscellaneous, section 171(1) of GST Act, 2017 governs the `Anti Profiteering Measures` (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 to 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 quotationer.

If contract cost exceeds 2,50,000.00 (Excluding GST), 2% GST TDS (1% CGST + 1% SGST or 2% IGST) will be deducted at source as per circular CA(Treasury) /Cash / City/ 20 dtd. 05.10.2018

39. Currencies

All payments will be made in Indian Rupees.

40. 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.

41. **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.

E. Finishing the Contract

42. 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.

43. 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.

44. 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. A percentage of the retention money, over and above the actual retention money 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 Cr.	Rs.10 Lacs or final bill whichever is more
2	Up to Rs.25 Cr.	Rs.1 Crore or final bill amount whichever is more
3	Up to Rs. 50 Cr.	Rs.2 Crores or final bill amount whichever is more
4	Up to Rs.100 Cr.	Rs.4 Crore or final bill amount whichever is more
5	More than Rs.100 Cr.	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.

45. Operating and Maintenance Manuals

45.1 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.

45.2 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.

46. Termination

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

46.2 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.

46.3 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.

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

46.5 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.

47. Payment upon Termination

47.1 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 un-recovered it will be a debt due from the Contractor to the Employer

47.2 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.

48. Property

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.

49. 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

50. Labour

50.1 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.

50.2 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.

51. 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 alsohave 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.

52. Drawings and Photographs of the Works

52.1 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.

52.2 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.

53. 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.

54 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.

55 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.

56. 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.

57. 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.

58. 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 pre-qualification 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.

59 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.

60 Clarifications

Applicants requiring any clarification on the tender may notify "the Authority" in writing or by fax or e-mail. 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.

61 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

62 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.

63 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.

64 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.

65 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.

66 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.

67 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.

68 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) (Not Applicable)**

~~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 (Not Applicable)**: ~~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.~~

69 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 the concern 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.

70 Subsequent Legislation:

If on the day of submission of bids for the contract, there occur changes to any National or State stature, 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.

71 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.

72 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 Brihanmumbai Municipal Corporation 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 Brihanmumbai Municipal Corporation or its Engineer or Officers in making periodical or final payments or in any other respect whatever.

73 Settlements 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 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.

74 Arbitration and Jurisdiction:

If the Commissioner shall fail 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 and in any such case 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. All disputes or differences in respect of which the decision (if any) of the Commissioner has not become final and binding as aforesaid shall be finally settled by

Arbitration as follows:

Arbitration shall be effected by a single arbitrator agreed upon the parties. The arbitration shall be conducted in accordance with the provisions of the Arbitration Act, 1996 or any statutory modifications thereof, and shall be held at such place and time within the limits of Brihanmumbai as the arbitrator may determine. The decision of the arbitrator shall be

final and binding upon the parties hereto and the expense of the arbitration shall be paid as may be determined by the arbitrator. Performance under the Contract shall, if reasonably be possible, continued during the arbitration proceedings and payment due to the Contractor by the Employer shall not be withheld unless they are the subject matter of arbitration proceedings. The said arbitrator shall have full power to open up, review and revise any decision, opinion, direction, certification or valuation of the Commissioner and neither party shall be limited in the proceedings before such arbitrator to the evidence or arguments put before the Commissioner for the purpose of obtaining his said decision. No decision given by the Commissioner in accordance with the foregoing provisions shall disqualify him from being called as a witness and giving evidence before the arbitrator on any matters whatsoever relevant to the disputes or difference referred to the arbitrator as aforesaid. All awards shall be in writing and for claims equivalent to 5,00,000 or more such awards shall state reasons for amounts awarded. The expenditure of arbitration shall be paid as may be determined by arbitrator.

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.

75 Copyright:

The copyright of all drawings and other documents provided by the Contractor under the contract shall remain vested in the Contractor or his sub-contractors 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.

76. **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.

77 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.

78 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.

79 Price Variation Clause (Not Applicable)

~~The Contractor shall be reimbursed or shall refund to the Corporation as the 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 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. a) Formula for Labour component:

VL = (0.88 R) x 30 x (I – IO)
100 IO
b) Formula for Material component:
VM = (0.88 R x 70 - C) x (W – WO)
100 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 up to 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 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 favourable 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.~~

80. Maximum Price Variation shall be as follows: (Not Applicable)

~~Time Period of Project~~	~~Maximum limit of Price Variation~~
~~Up to 12 months~~	~~No variation allowed~~
~~Above12 months to 24 months~~	~~5%~~
~~Above 24 months~~	~~**10%**~~

~~***Approval of AMC/MC shall be obtained before invitation of tender in case of any changes in above.**~~

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

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 clause8(l)(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.

81. Payment:

1. The payment of 60% of total Cost of material / equipment's will be made against the supply of the material / equipment's of captioned subject work on pro rata basis within 30 days from the date of receipt of correct bill, subject to satisfactory completion of supply as per contract terms and conditions.

2. The payment of 20% of total Cost of material / equipment's will be made against installation of material / equipment's of captioned subject work on pro rata basis within 30 days from the date of receipt of correct bill, subject to satisfactory completion of Installation work as per contract terms and conditions.
3. The balance payment of 20% of total contract cost will be made against successful testing and commissioning of the captioned subject work in all respect within 30 days from the date of receipt of correct bill, subject to satisfactory completion of work as per contract terms and conditions.

Interim Payment :**(Not Applicable)**

~~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 bill s 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 / retention money 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 ad hoc payment in the first week of next month after deducting there from recoveries on account of advances, interest, retention money, 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.~~

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

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

83. JOINT VENTURE (Not Applicable)

~~**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 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/altered/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 there-of.

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 be-half of the Joint Venture firm to deal with the tender, sign the agreement or enter into con-tract 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 favour 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:~~

~~**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.~~

84. 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 always 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 set off against any sum payable to the contractor under this or any other contract with the Municipal Corporation.

85. 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 unskilful 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 penalisation 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.

86. 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.

87. 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 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 deem 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 to 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 ideal on the site of 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.

88. 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 defence 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.

89. 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.

90. 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.

91. 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.

92. 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.

93. 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.

94. 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.

95. 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 mosquitogenic conditions are created so as to keep vector population to 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.

96. Grievance Redressal Committee (GRC)

1. If a Bidder is not satisfied with the decision of responsiveness/ non responsiveness in Packets 'A', 'B' or 'C' by the concerned HOD, he may appeal to D.M.C. (C.P.D.) by paying fee of Rs. 25,000/-.

2. D.M.C. (C.P.D.) will assign the work of co-ordination of various activities and administration work of G.C.R. to nominated Registrar - shri. Uday B. Mande.

3. The Committee for hearing grievances and passing orders will be constituted as follows:

(a) The Committee will comprise of D.M.C. / Director / Jt. M.C. of tender inviting department and D.M.C. / Director / Jt. M.C. of the department for which tender is being invited.

For example, if tender is invited by C.P.D. dept. for K.E.M. Hospital then the Committee will be of DMC (CPD) and DMC (PH).

(b) In case the tender inviting department and department for which tender is being invited are same then the concerned D.M.C. / Director / Jt. M.C. of same department and DMC (CPD) will be the members of the Committee.

For example, if tender is invited by Dean (KEM) for KEM Hospital then the Committee will be DMC (PH) and DMC (CPD).

In tabular format:

Tender inviting Department	**Work belonging Department**
DMC (CPD) or DMC / Director / Jt. M.C. of concerned Department.	Concerned DMC / Director / Jt. M.C.

4. In case the work is pertaining to various departments then concerned DMC /Director / Jt. M.C. having major contribution of work will be one of the members of the Committee.

5. The Committee will hear the grievances of bidder within 30 days on receipts of bidder's application and will pass an order within 45 days.

6. If Bidder is not satisfied with the decision of the above Committee. he may appeal to the concerned Addl. Municipal Commissioner of tender Inviting Department. The Addl. Municipal Commissioner will hear the case within 45 days from the date of receipt of application for second appeal from the bidder and will pass the order within 60 days.

SECTION 10

SPECIFICATIONS

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SPECIFICATIONS

GENERAL:

1. The tenderer shall visit the site at Pise before submitting the tender documents to verify and to be conversant with the scope of work.

2. The technical specifications for the work are prepared with care with a view not to create any additional item/work. However, all the items and works which are required for satisfactory completion and guaranteed performance of the system/projects are deemed to be included in the offer and no extra cost will be paid by BMC.

3. The tenderer shall go through the specifications & nature of work properly, get clear all doubts, and queries with BMC engineers before submitting the tender.

4. The contractor shall extend full co-operation and interaction with the other agencies at site, if involved. The contractor shall co-operate with the municipal staff and other agencies working at installations.

5. The contractor must have facilities to undertake this job including adequate plant and machinery.

6. The successful contractor shall take utmost care not to cause any nuisance due to noise, welding, operations etc. All the proper precautions shall be taken in this respect.

7. All legal proceedings in respect of any claim, dispute of difference shall be borne by successful tenderer.

8. The contractor shall take all the necessary precautionary & safety measures while carrying out the work as the work is to be carried out in live 100 kV switchyard.

9. The contractor shall be held responsible for any damage to the human being / machinery items, tools etc. during the execution of work.

10. Electricity and water if required for installation purpose at site, will be available free of cost.

11. The work shall be carried out with good workmanship following standard engineering practice.

12. The contractor shall provide identity card to all the workforce at site. The contractor shall depute the workmen of best knowledge for carrying out the work.

13. The contractor shall obtain work permit before starting the work from BMC Site Engineer.

14. The contractor shall use their own tools, equipment's, vehicles, consumables, safety equipment's and their own manpower.

15. The safety & security of material/equipment's supplied at site is the responsibility of the contractor & BMC is not responsible for any theft or damage of material/equipment kept at site.

16. **Payment will be made as per contract terms and conditions**. (General conditions of Contract Clause No. 81)

SPECIAL CONDITION:

- Before bidding on this work, the bidder shall visit the site of work i.e. 100 kV Pise Substation with prior permission of Executive Engineer (M&E) Pise on Email eemnepippc.he@mcgm.gov.in , to get aware with site situation, nature of work and submit the undertaking of their site visit in Packet B. The format is attached as **"Undertaking for site Visit"** in appendix section of the bid document.

BRIEF SCOPE OF WORK:

Note: The technical specifications and scope of work for 'SITC of Spare 10 MVA 100/3.6 kV Transformer with complete bay and allied work at 100 kV Substation, Pise' is prepared with care with a view not to create any additional item/work. However, all the items and works which are not mentioned in bid document but necessary for satisfactory completion and guaranteed performance of the subject work are deemed to be included in the offer and no extra cost will be paid by BMC.

Scope of work includes the design, manufacturing, factory testing (In Presence of BMC Engineers wherever mentioned), supply, installation, Pre commissioning tests at site and commissioning of Power Transformer, all associated switchyard equipment's and 3.3 kV switchgears.

All necessary work for Power Transformer, transformer bay, 3.3 kV switchgear at P/S and its integration with existing substation and Pumping Station is in scope of the contractor.

SCOPE OF WORK:

The scope of work for 'SITC of Spare 10 MVA 100/3.6 kV Transformer with complete bay and allied work' includes design, supply, erection, testing, and commissioning of all equipment, associated electrical/mechanical/civil works, protection/control integration with existing Substation and Pumping Station Automation Systems, and modification of existing Substation and Pumping Station schematics.

1. Design & Engineering

- Site survey.
- Preparation of layout drawings, foundation details, and electrical schematics.

- Relay setting calculations, protection coordination study, and structural design.
- Obtaining necessary permissions from Govt. authorities.

2. Supply, Installation, Testing & Commissioning:

- SITC of 10 MVA 100/3.6 kV Transformer with NGR, RTCC and other accessories.
- SITC of NIFPS for 10 MVA Transformer.
- SITC of 145 kV SF6 Circuit Breaker with breaker health monitoring system (BHMS).
- SITC of 400 Sq. mm. 3 Core Aluminium round GI armoured XLPE cable.
- SITC of 145 kV Current Transformers (CTs)
- SITC of 145 kV Isolators.
- SITC of 96 kV Lightning/Surge Arresters.
- SITC of Busbars, clamps, connectors, and power/control cables.
- SITC of Shield Pole with Shield wire, Mast Light Poles, Post Top Lanterns etc.
- SITC of Earthing system and its integration with existing substation earthing system.
- SITC of Galvanized steel support structures for all bay equipment as per site requirement.
- SITC of GI Ladder Type cable tray with all necessary accessories and cable trench covers as per site requirement
- SITC of Duplex type Control & Relay Panel for Transformer.
- SITC of 3.3 kV Incomer VCB, Bus coupler VCB & Bus PT Panel at Pumping Station.
- Supply of 03 Nos. of 145 kV Current Transformer as spare.

3. Foundation Work at Substation:

- Foundation of 10 MVA Power Transformer, 145 kV SF6 circuit breaker, Shield Pole, Lighting Mast & Post Top Lanterns and GI structures as per site requirement.
- Construction of new cable trenches (with GI cable tray & FRP trench cover) and expansion of existing cable trenches (with GI cable trays & FRP trench cover for extended trenches) wherever necessary.
- Transformer bay earthing with required number of earth pits and earthing strips and its integration with existing earthing system.
- Gravel filling of complete bay.
-

4. Integration with Existing Substation

- **Protection Integration Substation Control Room:** Integrating new Control & Relay Panel with existing Control & Relay Panels and Substation automation system.
- **Protection Integration Pumping Station:** Integrating new 3.3 kV I/C, B/C and Bus PT panels with existing Pumping station 3.3 kV automation system.

Note: It is responsibility of the contractor to study the existing Control & Protection system at 100 kV Pise substation & Pise Pumping station and if any change in relays/relay settings or any other work required for successful and guaranteed performance of the subject work is included in scope of the contractor and No Extra Cost will be paid by BMC.

APPROVAL OF ELECTRICAL INSPECTOR

The Contractor shall have to submit original and modified copy of Electrical Drawings and details to be submitted to obtain necessary approval of Electrical Inspector before start of the work for the captioned subject work of "SITC of spare 10MVA 100/3.6 kV Transformer with complete bay and allied electrical work at 100 kV Substation, Pise." and get it approved from Electrical Inspector. Contractor shall submit the copy of original and modified drawings in this office well in advance before starting the work. Contractor shall submit copy of approved drawings on receipt of approval from Electrical Inspector. The necessary fees etc. of the Electrical Inspector shall have to be borne by the Contractor.

TRANSFORMER

Scope:

This section covers the design, manufacture, assembly, testing at manufacturer's work, supply and delivery include loading, transportation & unloading at site, installation, testing at site and commissioning of the 10 MVA, 100/3.6 kV Power Transformer (01 No.) at 100 KV Substation, Pise as per specifications and site conditions, complete with all accessories required for satisfactory and trouble free operation of the equipment in the steps mentioned hereunder:

- The successful tenderer has to submit all drawings and design details for approval within 15 days after receipt of Purchase Order.

- The successful tenderer has to supply New 10 MVA Power Transformer (01 No.) with all the accessories at site.
- Installation, testing and commissioning of 100 kV/3.6 kV, 10 MVA Power Transformer with OLTC, NGR, RTCC panel as per schedule of quantity and technical specification at site.
- After successful completion of New 10 MVA Transformer, transformer will be kept charged and taken on load as per manufacturers instructions.
- The successful tenderer has to complete the work as per following schedule:

Standards:

The latest edition of the following standards shall confirm for 10 MVA power transformer, transformer oil, accessories & fittings etc.

Power Transformer	IS 2026
Transformer Oil	IS 335
Bushings	IS 2099 & IS 3347
On Load Tap Changer	IS 8468
Fitting & accessories for Power Transformer	IS 3639
Guide for loading of oil immersed transformer	IS 6600

Equipment meeting the requirements of any other authoritative standards which ensures a quality equal to or better than that as per the standards mentioned above shall also be acceptable. Where the equipment confirms to any other standards, salient points of difference between the standards adopted and the specified standards shall be clearly brought out in tender.

Technical Specifications of 10 MVA Power Transformer

1.	Make	CG Power, Siemens, Bharat Bijlee, BHEL, Kirloskar Electric, Alstom, ABB
2.	Type	Core type
3.	No. of phases	3
4.	Frequency	50 Hz

5.	Rated kVA	10000 kVA (10 MVA)
6.	Rated Voltage H.V.	100000V (100 kV)
7.	Rated Voltage L.V.	3600V (3.6 kV)
8.	Connection of H.V. winding	Delta
9.	Connection of L.V. winding	Star
10.	Vector Group	Dyn11
11.	Type of cooling	ONAN
12.	Taping on	H.V. Winding
13.	Type of tap changer	On load tap changer
14.	No. of steps of tap changer	21
15.	Tap range	-15 % to + 10 % (85kV to 110kV)
16.	% Impedance	As per IS 2026 (Latest Edition)
17.	Painting	Light Admiralty Grey or as per IS
18.	IS	Confirming to IS 2026 (Latest Edition)

Technical specifications of NGR

1.	Rated Resistance	As per design requirement
2.	Rated Voltage	$3.3/\sqrt{3}$ KV
3.	Rated Current	1600 Amp.
4.	Time Rating	10 sec.
5.	Temp. Rise	375^0C above 50^0 ambient
6.	Application	Neutral Grounding

Construction Details:

The feature & construction details of power Transformer shall be in accordance with the requirement stated here under.

Transformer Tank:

i. The tank shall be made from good commercial grade steel & shall be of welded construction. The structural steel material used for fabrication of tank shall be as per IS: 2062 (Latest Edition).

ii. All joints shall be hot oil tight & no bulging shall take place while in service. All the oil tight joints shall be made with suitable flanges, treated cork or other approved type of packing.

iii. The tank of Transformer shall be complete with all accessories and shall be designed so as to allow the complete Transformer tank filled with oil to be lifted by crane or jacks, transported by road, rail or water without over straining any joint and without causing subsequent leakage of oil.

iv. The tank shall be so designed that the core and winding can be lifted freely from the case with as little dismantling as possible and also shall be designed to withstand mechanical shock during transportation and vacuum filling of oil.

v. The tank cover shall be of adequate strength, and shall not distort when lifted. Inspection openings shall be provided as necessary to give easy access to bushings, for changing ratio or winding connections, or testing the earth connections at the link board. Each inspection opening shall be of suitable size for the purpose for which it is provided and at least two openings one at each end of the tank shall be provided.

Transformer Core:

i. The core shall be bolt less & built of non-ageing prime grade CRGO laminations having high permeability and low hysteresis loss and with hot oil proof insulation.

ii. The core material shall be prime CRGO, shall be procured directly from manufacturer or through accredited marketing organization of reputation. It shall be properly clamped together to the frame & bonded by application of araldite tightly to prevent undue vibration or noise.

iii. The complete design of core must ensure permanency of the core losses with continuous working of the Transformer. Core-clamping bolts, if used, shall be effectively insulated.

iv. Maximum flux density at normal voltage and frequency shall not exceed 1.6 tesla.

v. The core shall be provided with lugs suitable for lifting it.

vi. The clamping structure shall be so constructed that eddy currents will be minimum.

vii. The core and coil assembly shall be so fixed in the tank that shifting will not occur and cause any damage when the Transformer is moved shifted, or during a short circuit.

Windings:

i. All windings shall be made of electrolytic high conductivity copper and shall be fully insulated as defined in IS:2026 (Latest Edition). All neutral points shall be insulated for the voltage specified in IS:2026 (Latest Edition).

ii. The arrangement of windings must be such that there is good electrical and magnetic balance under all loading and short circuit conditions. Oil ducts shall be provided to ensure uniform temperature gradients and absence of hot spots.

iii. The general design and construction of the Transformer and the bracing of the windings shall be such that no mechanical movement of the coil is possible with dead short circuit on either side.

iv. The material used in the insulation and assembly windings shall be insoluble, non-crystallite and chemically inactive in the hot Transformer oil and shall not soften or otherwise, be affected under the operating conditions.

v. Special attention shall be given for the provision of adequate insulation and clearance between HV and LV windings. All clearance of winding and live parts must be adequate, for the maximum voltage of operation.

vi. All threaded connections shall be provided with locking facilities. All leads from the winding shall be duly brazed for proper contact to the terminal board and bushings shall be rigidly supported to prevent injury from vibration.

vii. The dielectric strength of the winding, insulation and the bushings shall conform to the values given in IS:2026 (Part III) or its latest amendment if any.

Terminal Arrangement:

A. **Bushing**:

i. All main winding and neutral leads for 100/3.6 kV Power Transformer shall be brought out through outdoor type bushings. The electrical characteristics of bushings shall be in accordance with IS-3347 and IS-2099. The bushing shall be rated for highest voltage and current rating of the respective windings and also shall be suitable for heavily polluted atmosphere.

ii. The bushings shall have higher factor of safety against leakage to ground and shall be so located as to provide adequate electrical clearances between bushings and between the bushings & ground parts after fixing of terminal

connectors. The spacing between the bushings shall be adequate to utilize full flashover strength preventing flashover between the phases or between phases & ground parts under all conditions of operation.

iii. All porcelain used in bushings shall be of the wet process homogeneous impervious to moisture and free from cavities or other flaws and throughout vitrified and smoothly glazed. The glazing shall be of the uniform colour and free from blisters, burrs and other defects.

B. **Terminal Arrangement**:

All bushing terminals and the gap setting shall be fixed with reference to the impulse strength of the windings.

Fitting and Accessories:

Transformer shall be provided with all necessary fittings and accessories which are required for 10 MVA Power Transformer as per IS 3636 and IS 2026:

i. Main conservator shall have air cell type constant oil preservation system to prevent Oxidation and Contamination of oil due to contact with moisture. Conservator for main tank shall be fitted with oil filling flange and Cap, Isolating Valve, Drain Valve, Magnetic Oil Level Gauge with Low Oil Level Alarm Potential Free Contacts. Conservator shall be as per arrangement provided in terminal arrangement as above. The conservator shall be provided with Separate Compartment for OLTC. Separate Conservator Tank or separate compartment shall be provided for OLTC.

ii. Prismatic Oil Level Gauge shall also be provided on conservator tank. The background shall be so painted that the oil level can be seen from ground level also. The three positions of oil level shall be indicated viz.

i) Minimum ii) Normal iii) Maximum

iii. Conservator vessel shall be fitted with a glass container type high quality breather in which silica gel, the dehydrating agent and so, designed as:

1. The passage of air through the silica gel.
2. The external atmosphere is not continuously in contact with the silica gel.
3. The moisture absorption indicated by a change in colour of the tinted crystals can be easily observed from the distance.
4. Breather shall be mounted at proper height from the ground level and shall be connected to the air cell of the conservator through pipe for the purpose of breathing during contraction or expansion of the air cell.

iv. The oil connection from the Transformer tank to the conservator vessel shall be

arranged at a raising angle of 3 to 9 degrees to the horizontal up to the Buchholz Relay and shall consist of pipe with inside diameter 80 mm as per capacity of the Transformer and as per IS:3639. The Transformer shall be provided with Gas and Oil Actuated Relay (Buchholz Relay) equipment conforming to I.S.3637 double float type with one set of alarm contacts, one set of trip contacts and a testing pet cock. The contacts shall be wired with a P.V.C. armoured cable. The Buchholz Relay will have suitable valves on its both sides so as to facilitate its testing at site as well as Cut Off oil supply to the Transformer.

v. Pressure Relief Device shall be provided of sufficient size for rapid release of any pressure that may by generated within the tank, and which might result in damage to the equipment. The device shall operate at a Static Pressure of less than the Hydraulic Test Pressure for Transformer tank. Means shall be provided to prevent ingress of rain. It shall be mounted on the cover of the main tank and shall be designed to prevent gas accumulation. Spring loaded setting type Pressure Relief Valve having suitable opening Port hole according to the capacity of the Transformer should be provided. The Pressure Relief Valve should have the provision of visual indication for opening of the valve and also Contract/Micro Switch arrangement for Alarm/Tripping Function.

vi. Transformers shall be fitted with the following and as per I.S. specified above:
    a) The Filter and Drain Valves (gate type) as per IS specified.
    b) Suitable Oil Sampling Device shall be provided at the top and bottom of the main tank.
    c) Suitable Air Release Plugs on the main tank of the Transformer.
    d) All other Suitable Valves opening to atmosphere shall be fitted with blank flanges.
    e) The Drain Valve and Bottom Filter Valve should be provided with a protective cover with nuts-and-bolts arrangement.

vii. The Oil Temperature Indicator with two Electrical Contacts for Alarm and Trip Purposes and with Repeater for Remote Indication, shall be provided with Anti-Vibration mounting. The oil Temperature Indicator shall be housed in the marshalling box.

viii. The Winding Temperature Indicator with two Electrical Contacts for Alarm & Trip purposes and with repeater for remote indication, shall be provided with Anti-Vibration mounting. The winding temperature indicator shall be housed in the

Marshalling Box.

ix. A sheet steel Vermin Proof, Well Ventilated and Weather Proof Marshalling Box of a suitable construction shall be provided for the Transformer Ancillary Apparatus (like Winding & Oil temperature indicator, Terminal Blocks and Gland Plates for incoming and outgoing Cables). The box shall have Domed or Sloping Roofs and the Interior & exterior painting shall be in accordance with relevant IS. Door of the compartment shall be provided with Non-Glass Transparent Type Acrylic Window of adequate size. Ventilation louvers shall be provided. Suitable removable Cable Glands Plate shall be provided at the bottom of kiosk for passage of Incoming and outgoing cable.

x. The following plates shall be fixed to the Transformer tank at a suitable height so that the particulars could be read by standing at ground level. A Rating Plate bearing the date specified in the relevant clauses of IS:2026 including figures of Temperature Rise of Oil and Winding and High Voltage Test values. The Diagram Plate showing the Internal Numbering of Taps, Tapping Switch Connection of Windings and also the Voltages Vector Relationship in accordance with IS:2026 and in addition a Plan View of the Transformer giving the correct physical relationship of the terminals.

xi. All bolts and nuts exposed to weather shall be of GI grade only.

xii. Any other fitting and accessories not covered here in and are useful or necessary for efficient operation of Transformer shall be provided by the Contractor.

Cooling Arrangement:

a. Transformers covered by this specification shall have 'ONAN' cooling. The cooling shall be affected by Pressed Steel Radiators conforming to IEEMA. The Radiators Fins provided shall have sufficient surface to limit temperature rise to values specified in IS:2020.

b. The Radiator Fins shall be seamless, made of mild steel having as minimum wall thickness and a clean bright internal surface free from dust and scale. They shall be suitably braced to protect them from mechanical shocks, normally met in transportation and to damp the modes of vibration transmitted by the active part of the Transformer in service.

c. Oil leak Proof Butterfly Valves (positive operated) shall be provided to facilitate taking out any of the radiators without disturbing the Transformer. Necessary

gaskets in required nos. for fixing radiators and butterfly valve operating keys shall be provided.

d. Radiator fixing bands in top & bottom of radiators to be provided to minimize the vibration of the same.

e. The space between the bottom of tank and mounting rail shall be maintained, for free air circulation.

f. The Insulating Oil for Transformer shall conform to IS: 335. The quantity of oil for Transformer (including accessories) and OLTC should be indicated separately in the rating plate.

On Load Tap Changer:

a. On Load Tap Changer (OLTC) shall be provided as per I.S. 8468 specified and shall be designed suitable for local manual as well as local electrical operation and Remote electrical operation.

b. The tap changer shall be of 21 taps capable of permitting parallel operation with other existing10 MVA Transformer.

c. The on-load tap changer shall include the following:

i. An oil immersed tap selector and arching switch or arc suppressing tap selector, provided with reactor or resistor for reduction of make and break arcing voltages and short circuits.

ii. Motor driven mechanism.

iii. Control and protection devices.

iv. Local/Remote tap changer position indicator.

v. Manual/Electrical operating device.

vi. Voltage tapping range on H.V. side shall be provided as per existing Transformer.

vii. The On-Load Tap Changer shall be designed so that the contacts do not interrupt arc within the main tank of the Transformer. The Tap Selector and Arcing Switch or Arc Suppressing Tap Selector Switch shall be located in one or more oil filled compartments. The compartment shall be provided with Oil Surge Relay. Those compartments shall be designed so as to prevent the oil in tap selector compartments from mixing with the oil in the Transformer tank.

viii. Limit Switches may be connected in the control circuit of the Operating Motor provided that a Mechanical Declutching Mechanism is incorporated.

ix. A suitable Pressure Relieving Arrangement should be provided to take care of sudden pressure rise in the compartment. But this should, in no way, affect the performance of the Oil Surge Relay provided for this compartment. Oil surge Relay with Trip Float Arrangement shall be provided for OLTC compartment.

x. The manual operating device shall be so located on the Transformer so that it can be operated by a man standing at the level of the Transformer track. It shall be Strong and Robust in construction.

xi. The control scheme for the tap changer shall be provided for independent control of the tap changers when the Transformers are in independent service. In addition, provision shall be made so that under Parallel Operation the tap changer will give Alarm and Visual Indication for becoming out of step. Visual Indication during the operation of motor shall also be incorporated. The tap change control must ensure step by step operation under all operating conditions.

xii. The contactors and associated gear for the tap change driving motors shall be housed in a local kiosk mounted on the Transformer. The motors shall be suitable for operation with 3-phase 400 Volts, 50 cycle external power supply.

Remote Tap Changer Control Panel:

- The Contractor shall furnish, in addition to the equipment above, the following accessories mounted on a separate Remote Tap Changer Control (RTCC) panel or in existing RTCC panel. It shall also have Automatic Voltage Regulator & necessary cables to be installed in **Pumping Station Control Room or at available space in Pumping Station for remote operation** or as directed. (The door of RTCC panel should be preferably front opening type.)
- Raise and Lower Push Button Switch.
- Remote Tap Position Indicator and other required devices. One chart showing the voltage corresponding to tap position indicator shall be engraved on a metal sheet and the same shall be fixed near the Tap Position Indicator on the RTCC (panel).
- An indication lamp showing tap changing in a progress.
- A four-position selector switch having; Master, Follower, Independent and Off position.
- Name Plate of each component.
- Cubicle lamp actuated by door, switch, space heater power sockets etc. shall be

provided inside the RTCC panel.

- other accessories which are required but not covered here in for complete operation of tap changer.
- An Under-Voltage Relay shall be incorporated to monitor the 110 Volt AC control Circuit Voltage Circuit Supply. Similarly, Audible and Visual Indication shall be provided in RTCC panel.

Noise Level:

Noise level of the new power Transformers shall be as per the guidelines of the NEMA.

Transformer Losses:

The Transformers are to be designed with maximum permissible losses as indicated below:

a) No Load Losses at Rated Voltage: As per existing Transformers or better
b) Full Load Losses at Rated Voltage: As per existing Transformers or better

Installation of New 10 MVA Transformer

i. Supply and Install New 10 MVA Transformer exactly on the place directed by Engineer of contract.

ii. Connection of cable: -

a) Provide Control and Power Cables with New Cables as per drawing.
b) All internal wiring shall be securely supported, neatly arranged, readily accessible and connected to equipment terminals and terminal blocks.
c) Engraved Code Identification Plastic Ferrules marked to correspond with schematic diagrams shall be fitted at both ends of wires. Ferrules shall fit tightly on wires and shall not fall off when the wire is disconnected from terminal block.

iii. Connection of Bus-bar: -To connect extended 100 KV Bus-bars to the Bushing of the Transformer with proper alignment.

iv. Relay Setting: Testing, Discrimination & co-ordination of Protective Relays for both newly installed Relays and existing Relays at Sub-station and Pumping station as per rating of the Transformer.

v. Neutral Grounding Resistor (NGR): NGR shall be supplied and installed by the Contractor at the location shown by Site Engineer to limit the magnitude of Fault

Currents. By connecting the system's neutral point to the ground through a resistor, the NGR shall restrict the current to a Safe Level, protecting 10 MVA Transformer from damage. This should also allow protective devices to operate effectively, reducing Transient Over Voltages, and enhance Personnel Safety by limiting the energy involved in Arc Flashes.

Testing of New 10 MVA Transformer at manufacturer's works:

The Contractor shall carry out all the necessary Routine Test and Special Tests during manufacture as per the provision of I.S.2026 of the Transformer.

i. Routine Test:

a. Measurement of Winding Resistance, Measurement of Turns Ratio for all sets windings on each tap
b. Polarity and Phase Vector Relationship.
c. Measurement of No-Load Loss and No-Load Current.
d. Measurement of Impedance Voltage and Short Circuit Impedance Test at Normal, Maximum and Minimum tap
e. Measurement of Insulation Resistance between Windings and between Windings & Earth.
f. Measurement of Load Loss.
g. Induced Over Voltage Withstand Test.
h. Separate Source Voltage Withstand Test.
i. Magnetic Balance Test.
j. Measurement of Transformer Oil BDV before and after completion of tests.
k. Oil Leakage Test of Transformer tanks at a pressure equals to the normal pressure or as per relevant IS.

ii. Special Test:

a. Dielectric Test
b. Measurement of Zero Sequence Impedance Test
c. Measurement of Lightening Impulse Test Online Terminals of HV.
d. Measurement of the Harmonics of the No Load Current.

All above mentioned tests of power Transformer shall be carried out in the presence of B.M.C. Engineers.

- The Contractor shall give necessary Pre-Commissioning Checks and Tests at site as

per relevant I.S.

- The Contractor shall commission New 10 MVA Transformer and shall submit contingency report after successful testing of the Transformer as per I.S.2026.

NITROGEN INJECTION FIRE PROTECTION SYSTEM FOR 10MVA TRANSFORMER:

Nitrogen injection Fire Protection System designed for Oil Filled Transformers shall prevent tank explosion and the fire during internal faults resulting in an arc, where tank explosion will normally take few seconds after arc generation and also extinguish the external oil fires on Transformer top cover due to tank explosion and /or external failures like bushing fires, OLTC fires and fire from surrounding equipment.

The system shall work on the principle of DRAIN AND STIR and on activation, it shall drain a pre-determined quantity of oil from the tank top through outlet valve to reduce the tank pressure and inject nitrogen gas at high pressure from the lower side of the tank through inlet valves to create stirring action and reduce the temperature of top oil surface below flash point to extinguish the fire. Conservator tank oil shall be isolated during bushing bursting, tank explosion and oil fire to prevent aggravation of fire.

Transformer isolation shall be an essential pre-condition for activating the system. The system shall be designed to operate automatically. However it shall be designed for manual operation, in case of failure of power supply.

I. The system shall consist of following equipment.

1. Fire extinguishing cubicle placed on a plinth at about 5-7 meter away from the Transformer or beside fire wall.
2. Control box placed in the control room.
3. Pre-stressed Non-Return Valve in the Conservator pipe.
4. Required number of Fire Detectors on the tank top cover.
5. Signal box fitted on the tank sidewall.

I. <u>Scope</u>:

The Scope of This Specification Covers Design, Engineering, Supply, Testing at Works before dispatch, Erection, Testing and Commissioning and Performance

Demonstration of "Fire Prevention and Extinguishing System by Nitrogen Injection Method" by Oil Drain and Nitrogen Injection. Existing Oil Pit Chamber at 100 kV Substation, Pise shall be utilized for collection of oil at the time of system activation. Any modification in existing oil pit tank, if required shall be done by the Contractor without extra cost. Construction of plinth for extinguishing cubicle, lying of oil pipe, nitrogen pipe, electrical cables, control boxes, nitrogen cylinder, PRV, fire detectors and other equipment & accessories required for erection, testing, commissioning and performance demonstration of the complete fire protection system is in the scope of the Contractor. For smooth operation of the system, any modifications not mentioned in the technical specifications can be incorporated without extra cost to BMC.

II. Operational Controls:

The system shall be provided with automatic control for fire prevention and fire extinction. Besides automatic control remote electrical push button/switch control on control box and local manual control in the fire-extinguishing cubicle shall be provided. Spare potential free contacts of system activation for interlocks are to be provided for ensuring that it should not be possible to close HV or LV circuit breakers to energize the Transformer after the activation of the fire prevention and fire extinction system.

III. System Activating Signals:

Transformer isolation shall be an essential pre-condition for activating the system. Transformer isolation through Master Trip Relay or Circuit Breaker (HV and LV side in series) has to be incorporated. Besides, two electrical signals to be provided in series, for activating the system as under:

For Prevention:

1. Differential relay.
2. Buchholz relay paralleled with pressure relief valve.

For Extinction:

1. Fire detector.
2. Buchholz relay paralleled with pressure relief valve.

IV. System Equipment:

A) Fire Extinguishing Cubicle (FEC)

Fire Extinguishing Cubicle (FEC) frame made of CRCA sheet of 3 mm (min.) thick complete with base frame, painted inside and outside with red colour. It shall hinged split doors fitted with high-quality tamper proof lock. The degree of protection will be IP55. Fire Extinguishing Cubicle (FEC) shall consist of:

1. Nitrogen gas cylinder with regulator and falling pressure electrical contact manometer.
2. Size of Fire Extinguishing Cubicle shall be suitable as per site condition.
3. The nitrogen regulator valve shall be designed in such a way that the nitrogen will not enter the Transformer tank even in case of passing/leakage of valve.
4. Oil drain pipe with mechanical quick drain valve.
5. Electro mechanical control equipment for oil drain and pre-determined regulated nitrogen release.
6. Pressure monitoring switch for backup protection for nitrogen release.
7. Limit switches for monitoring of the system.
8. Flanges on top panel for connecting oil drain and nitrogen injection pipes for Transformer.
9. Panel lighting.
10. Oil drainpipe extension of suitable sizes for connecting pipes to oil pit

b) Control Box

Control box is to be placed in the control room for monitoring system operation, automatic control and remote operation. The following alarms, indications, switches, push buttons, audio signal etc. shall be provided.

1. System on
2. TCIV open
3. Oil drain valve closed
4. Gas inlet valve closed
5. TCIV closed
6. Fire detector trip*
7. Buchholz relay trip
8. Oil drain valve open*
9. Extinction in progress*
10. Cylinder pressure low*
11. Differential relay trip
12. PRV/RPRR trip
13. System out of service*
14. Fault in cable connecting fault fire detector
15. Fault in cable connecting differential relay

16. Fault in cable connecting Buchholz relay
17. Fault in cable connecting PRV/RPRR
18. Fault in cable connecting Transformer/reactor trip
19. Fault in cable connecting TCIV
20. Power/ Manual/off
21. Extinction release on/off
22. Lamp test
23. Visual/ audio alarm*
24. Visual audio alarm for DC supply fail *

*** Suitable Provision of spare potential free contact shall be made in the control box, for monitoring of the system from remote substation using the substation automation system**.

c) Transformer Conservator Isolation valve

Transformer Conservator Isolation valve (TCIV) to be fitted in the conservator pipe line, between conservator and buchholz relay operating mechanically on Transformer oil flow rate with electrical signal for monitoring with visual position indicator. Pad locking arrangement shall be provided for locking PNRV in service and filtration/ oil filling/refilling mode.

d) Fire detectors

The system shall be complete with adequate number of fire detectors (quartz bulb, 141^0 C) fitted on the top cover of the Transformer for sensing fire.

e) Signal box

Signal box to be fixed on Transformer sidewall for terminating cable connections from fire detectors and TCIV. The degree of protection shall be IP55.

f) All other consumables necessary for complete system.

V. <u>Cabling</u>:

1. Fire survival cables, able to withstand 750^0C, 4 core x 1.5 mm sq for connection of fire detectors in parallel shall be used. Cable shall be marked with relevant BS. The test certificates for the cables shall be submitted.
2. Fire retardant low smoke (FRLS) cable 12 core x 1.5 mm sq. for connection between Transformer signal box/marshalling box to control box and control box to fire extinguishing cubicle shall be used. Cable shall be marked with relevant IS.

3. Fire retardant low smoke (FRLS) cable 4 core x 1.5 mm sq. for connection between control box to DC supply source and fire extinguishing cubicle to AC supply source, signal box/ marshalling box to pre-stressed non return valve connection on Transformer shall be used. Cable shall be marked with relevant IS.

VI. Pipes

Following types of Pipes complete with connections, flanges, bends and tees, shall be supplied along with the system.

1) 25mm C class ERW pipe
2) 50 mm B class ERW pipe
3) 80 mm C class ERW pipe
4) 100 mm C class GI pipe

VII. Other Requirements For System Installation:

1. Oil drain and Nitrogen injection connections with gate/butterfly valves and `T' on Transformer tank at suitable locations.
2. Flanges with dummy piece in conservator pipes between conservator pipe between Buchholz relay and conservator tank for fixing TCIV
3. Fire detector brackets on Transformer top cover.
4. Spare potential free contacts for system activating signals i.e. differential relay, Buchholz relay, pressure relief device, RPRR, Circuit breaker of Transformer.
5. Pipe connections between Transformer to fire extinguishing cubicle and fire extinguishing cubicle to oil pit.
6. Cabling on Transformer top cover all fire detector to be connected in parallel and inter cabling between signal box to control box and control box to fire extinguishing cubicle.
7. Plinth for fire extinguishing cubicle.
8. Facility shall be provided in the system to test the system when Transformer is in service without actually draining the oil and injecting Nitrogen gas.

VIII. Technical Details:

1. Fire Extinction period- On commencement of Nitrogen injection: Maximum 30 seconds.
2. On system activation up to post cooling: Maximum 3 minutes
3. Fire detectors heat sensing temperature: 141 ^{0}C
4. Heat sensing area per detector: Up to a radius of 800 mm

5. Transformer Conservator Isolation valve setting: min. 60 Ltr. per minute (Min)
6. Capacity of nitrogen cylinder: -50 ltr (Minimum) water capacity and will hold 10 m^3 (Minimum) gas at pressure of 150 kg/cm^2 (Maximum)
7. Power Source: Control Box: 110 V DC
8. Fire extinguishing cubicle for lighting: 240 V AC

Testing:

- **Factory tests:** Tests shall be carried out on individual components of the system, as applicable and the total system for the performance of fire extinguishing test. Transformer fire to be extinguished within the 30 seconds during the factory test.
- **Performance test**: Performance test of the complete system shall be carried out after complete erection at site by the supplier's representative. These tests shall include simulation and verification of the response of the complete system without injection of the nitrogen gas into the Transformer, however Nitrogen gas to be released in the atmosphere.

145 kV SF6 Circuit Breaker Specifications:

The new SF6 CB supplied by the contractor shall conform to the latest relevant IS.

1. Adaptor frame, supporting structures and all hardware shall be hot dip galvanized and shall be supplied by the manufacturer.
2. High Voltage outdoor circuit breaker shall be of SF6 type and shall comprise of 3 separate single pole units linked together.
3. Operating mechanism:
    a. The mechanism shall be power operated by motor charged spring operated mechanism. It shall be trip free. One O-CO operation shall be possible in case of failure of power.
    b. Anti pumping features shall be provided with the breaker.
    c. The trip coil/s shall have sufficient continuous rating to cater to the trip coil supervision relay current.
    d. Main poles shall operate simultaneously.
    e. A mechanical indicator shall be provided inside the operating mechanism box to show open and closed positions, visible through a glass window from ground level. An operation counter shall also be provided.
4. Spring operated mechanism:

a. Spring operated mechanism shall be complete with motor, springs, limit switches etc.

5. Operating mechanism control:

i) Operating mechanism shall normally be operated by remote electrical control. Electrical tripping shall be performed by shunt trip coils. Provision shall be made for local electrical control. 'Local/ Remote' selector switch shall be provided in the operating mechanism cubicle.

ii) A conveniently located emergency tripping lever shall also be provided for local tripping of the breaker. A local manual closing device, which can easily be operated from the ground, shall also be provided for maintenance purposes. Direction of motion of handle shall be clearly marked.

iii) Operating mechanism and all accessories shall be enclosed in a sturdy, weather proof local control mechanism cabinet of suitable material (degree of protection shall be IP 55 minimum). Hinged doors giving access to the mechanism at the front and sides shall be provided. Suitable gaskets shall be provided to make the mechanism housing water-proof and dust-proof. The circuit breakers shall incorporate the following features.

a) Spring charged 'close' and 'Trip' devices.

b) 'Local' – 'Remote' selector switch.

c) Set of red, green and amber indicating lamps complete with series resistances for circuit breaker 'closed', 'open' and 'trip' conditions.

d) Pressure gauge

e) 15A, 3 pin, 240V AC receptacle with switch.

f) Cubicle lamp – LED lamp with pin type holder.

g) Space heater suitable for 240V AC, equipped with automatic thermostatic control.

h) A suitable canopy to prevent ingress of rain water during operation or maintenance will be provided.

i) Wiring terminal in the cubicle shall have proper access for working on it.

j) Manually operated tripping push button/ lever (mechanical) conveniently located to trip all three phases simultaneously.

k) Operation counter.

l) Terminal blocks with minimum 10% spare terminals.

m) Control switches to cut off control power supplies.

n) MCBs as required.

o) Two earthing terminals

p) Auxiliary relays.

q) Motor contactor with thermal release for spring charging motor.

30. The SF6 Circuit Breaker to be installed shall be suitably tested at site as per manufacturer's recommendations before installation. The necessary testing equipment's, meters etc. shall be arranged at site by the contractors.

31. Before installation, all the material shall be got approved from BMC engineers.

32. Necessary instructions given in manufacturer's instruction manual for packing, loading, unloading, transportation & installation etc. should be followed.

33. Necessary pre-commissioning tests shall be carried out on SF6 Circuit Breaker after installation and before taking into service, as per instructions given in manufacturer's manual

Inspection: The successful tenderer shall offer the 145kV SF6 Circuit Breaker for inspection by three BMC Engineers at manufacturers works and shall give all the routine test as per relevant I.S. The necessary expenses toward to & fro journey & lodging & boarding of 3 BMC Engineers shall be borne by BMC.

Technical Specifications of 145 kV SF6 Circuit Breaker

Description	Rating
Rated Voltage	145 kV
Rated lightning impulse withstand voltage	650 kVp
Rated power frequency withstand voltage	275 kV
Rated frequency	50 Hz
Rated normal current	3150 A
Rated short - circuit breaking current	40 kA
Rated short circuit duration	3 s
Rated out - of - phase breaking current	10 kA
Rated short time out - of - phase breaking current	100 kA
First pole to clear factor	1.5
Rated Line charging breaking current	50 A
Rated single capacitor charging breaking current	400 A
Rated Pressure of SF6 at +20 degree (Gauge)	6.0 bar rel
Weight of SF6 filling (Approx.)	6.6 kg
Control Voltage	110 V DC
Operating Mechanism voltage	240 V AC

I. Breaker Health Monitoring System (BHMS)

SF6 Circuit Breaker is one of the critical components of the switchyard. Breaker Health Monitoring System (BHMS) is required to achieve reliability of such an important switchgear. Breaker Monitoring and Health Status Indication of the components of the Circuit Breaker are needed to avoid unexpected breakdowns. It enables users and maintenance team to continuously supervise equipment condition, performance trend and constantly manage the related warnings and faults. The SF6 Circuit Breaker panel is very compact hence the breaker Health monitoring system shall be compact.

1. **BHMS Unit:**

Device shall include all Sensors, processor & LED indication in a single unit.

The breaker Health monitoring system must be capable of monitoring and indicating the health status of the following components:

- Closing Coil (CC)
- Tripping Coil (TC)
- Spring Charging Motor (SCM)
- Space heater
- SF6 Gas pressure Level (Low & High)
- It should have provision for monitoring additional 4 current based inputs

2. **Health Status Indications**

The system shall provide indications for the health status of the monitored components like CC, TC, SCM etc. This functionality is crucial for maintenance planning and preventing unexpected breakdowns. The health indications should include:

a) Healthy: Indicates that the component is operating normally.
b) Need Attention: Indicates that the component requires maintenance soon.
c) Need Immediate Action: Indicates that the component needs urgent action /Replacement etc.

3. **LED Indicators**

The device shall have below inbuilt LED indications for various states:

a) Power ON Status: Indicates that the device is powered on.

b) Active Status: Product data analysis and calculation are sent to remote display unit after every operation.

c) Modbus Communication ON Status: Indicates that the Modbus communication is active / healthy.

d) Alarm Status: Indicates alarm when any of the component is changed state from healthy to unhealthy.

e) Alarm acknowledges: Device shall have alarm acknowledgement reset facility

4. **Display:**

a) Device shall have inbuilt provision of detachable type display to monitor or do analysis of individual breaker at site, this display provision is in addition to Modbus communication facility available on the device.

b) Device shall have loop in loop out Modbus communication facility so that all breakers can be monitored remotely at common HMI. Contractor shall provide one common display to use it on individual breaker by just connecting the device cable for monitoring device at site.

c) The monitoring software shall be supplied at no cost and as part of supply along with device.

d) Software shall have provision to create SLD for monitoring all CBs. Software shall generate report in the customize format for historical data with time stamping which can be used for analysis.

5. **Dimensions:**

The BHMS must be compact to fit within the space constraints of the new SF6 circuit breaker. The maximum allowable dimensions are:

Depth: 220 mm
Width: 55 mm
Height: 110 mm

6. Power Supply: The device must operate on a single phase 230VAC or 110V DC

7.Modbus Communication: The device shall have Modbus RS 485 communication to facilitate remote data communication with SCADA systems.

8.Operation time- Device shall have facility to calculate the closing coil operation time, tripping coil operation time and spring charging motor operation time. This data shall be useful for maintenance purpose and analysis.

10.Installation, Integration & training

The bidder shall consider the entire scope of installation, cable laying, device integration and commissioning of the monitoring system.

a) The Contractor shall install & connect the new SF6 Circuit Breaker along with BHMS using the new clamps. After installing the SF6 Circuit Breaker between the equipment, using the clamps, the Contractor has to carry out the Contact Resistance Measurement (CRM) tests of such clamps. The resistance value should be within the permissible limit.

b) The new SF6 Circuit Breaker shall be identical to the existing 100kV bus arrangement.

c) Complete SF6 Circuit Breakers, BHMS with all the necessary items for successful operation shall be supplied with complete support insulators, base frame, linkages, operating mechanism, control cabinet, interlocks, etc.

Note: Experience in BHMS (Breaker Health Monitoring System) to be submitted with technical Packet-B

The bidder shall submit a Work Completion Certificate for the successful supply, installation, testing and commissioning (SITC) of a Breaker Health Monitoring System (BHMS) issued by BMC, Semi-Government, Government or Public Sector Undertaking (PSU). The certificate shall clearly indicate the nature and scope of work executed and its successful completion. The certificate shall be issued by the competent authority of the concerned organisation.

Current Transformer Specifications

1. Current transformer shall be hermetically sealed to prevent climatic breathing and entering of air and moisture. For compensation of variation in volume of oil due to temperature variation, stainless steel bellows shall be mandatorily provided on CTs.
2. Secondary core shall be housed in metallic housing (Rigid Shell) to ensure uniform electric field distribution & to protect the secondary core from high voltage surges.
3. The design & construction of current transformer shall be Internal Arc Proof to

increase the safety and to protect nearby equipment's from getting damaged. Pressure relief device i.e. suitably designed stainless steel bellows shall be used which will act as oil volume compensating device during normal service and will act as a pressure releasing device during an internal fault. In case of an internal arc fault in CT, the porcelain insulator & other metal parts like tank, base & hardware should not get shattered or disengage (i.e. CT should be free in standing condition).

4. The design & construction of current transformer shall be sufficient to withstand the thermal and mechanical stresses resulting from the specified short time current & its duration. The offered current transformer shall not exceed the Short Circuit Ampere Turn (SCAT) value as validated by short circuit type test on current transformer.

5. Oil impregnated paper shall be used for insulation. No substandard quality of paper/material shall be used for the insulation of current transformer.

6. Current transformer shall be provided with suitable test tap for measurement of Capacitance and Tan delta. Provision shall be made for solid and secured earthing of test tap connection, when not in use.

7. Secondary leads shall be brought out in secondary box which should be independent from base. Separate undrilled removable gland plate shall be provided on bottom of secondary box for external cable termination arrangement on site.

8. Manufacturer should have in-house NABL accredited laboratory to conduct routine tests as per latest standards of IS 16227 & IEC 61869 (Part 1 & 2).

Other Details

1.Earthing terminals: Earthing terminals shall be provided on each sides of the tank for connecting 65 mm x 10 mm M.S. strip.

2. Oil level indicator: Shall be provided.

3. Filling and drain plugs: Shall be provided.

4. Facility for lifting bushing and tank: Shall be provided.

5. Insulating oil: Shall be provided in proper quantity.

Inspection: The successful tenderer shall offer the Current Transformers for inspection by three BMC Engineers at manufacturers works and shall give all the routine test as per relevant I.S. The necessary expenses toward to & fro journey & lodging & boarding of 3 BMC Engineers shall be borne by BMC.

Technical Specification of Current Transformer

Model	Single Pole
Type	Oil Impregnated, Hermetically sealed, Outdoor, Live Tank Type
Comply to	IEC 61869-1 & 2 / IS 16227-1 & 2
N S Voltage	132 kV
H S Voltage	145 kV
Insulation Level	275 kV / 650 kVp
Rated Pry Current	50-100 Amp.
S.T. Current & Duration	31.5 kA / 1 Sec.
Rated Dynamic Current	78.75 kA (peak)
Rated Cont. Thermal Current	120 Amp.
Frequency	50 Hz
Insulation Class	Class A (Oil impregnated paper)
Tank / Housing	Aluminium
Min. Creepage Dist.	3625 mm
Height Up to Pry Terminal	2100 mm (Approx.)

Core Details of 145 kV Current Transformer

Details	Core No. I	Core No. II	Core No. III	Core No. IV
Ratio	400-200/1A	100-50/1A	100-50/1A	100-50/5A
Sec. Terminal	1S1-1S3 1S1-1S2	2S1-2S3 2S1-2S2	3S1-3S3 3S1-3S2	4S1-4S3 4S1-4S2
VA	--	30-15	--	30-15
Class	PS / PX	5P20	PS / PX	1
KpV (min)	400-200V	-	500-250V	-
Iexc (max) vk/2	50-100mA	-	50-100mA	-
Rct at 75^0CΩ	2-1	-	4-2	-

TRANSFORMER CONTROL & RELAY PANEL (Duplex Type)

SCOPE OF WORK:

1. Tenderer shall go through the specifications properly, visit the 100 KV Substation at Pise to get acquainted with the existing panels, relays and get cleared all the doubts & queries with BMC engineers before uploading the tender.
2. The contractor shall design, manufacturer & supply control & relay panel for 10 MVA Transformer with numerical relays (Make: Schneider / GE Alstom /ABB / Siemens) & other equipment's as per attached list. **It is responsibility of contractor to take exact dimensions at site.** Note the list is tentative only and any other material / equipment required for successful completion of work is deemed to be included in your scope.
3. The contractor shall check the scheme for…
    a. ON/ OFF operation from local and remote control
    b. Interlock for breakers, isolators etc.
    c. Tripping of breakers through relays.
4. The contractor shall submit drawings of control & relay panel for BMC's approval before manufacturing.

5. All the numerical relays shall be tested at site in presence of manufacturer's engineer. Necessary testing kits & instruments shall be provided at site by the contractor. All the testing kits & instruments shall have valid calibration at the time of their use and the contractor shall submit calibration certificates to BMC's site engineer before using them.
6. The contractor shall make their own arrangement for transporting the staff, material, tools and tackles etc. to site.
7. The contractor will be provided 1 Ph 230V AC electric supply by BMC as per requirement.
8. The contractor shall set the relays supplied & installed by him so as to have proper coordination with rest of the network.
9. The contractor shall give the details of the tests offered for carrying out testing of latest communication protocol IEC 61850.
10. The contractor shall submit three bound copies of all test reports.
11. The numerical relays installed shall be tested at site in presence of BMC engineers.
12. **Inspection:** The control & relay panel will be inspected at Manufacturer's works by 3 BMC engineers. The charges towards the inspection & testing including to & fro travelling, lodging & boarding expenses of 3 BMC engineers shall be borne by BMC.
13. New panels supplied by the contractor shall match degree of protection of existing panels.
14. The switches, semaphore, annunciation windows, indicating lamps, meters, push buttons, temperature indicators, tap indicators etc. shall be provided similar to existing panels.
15. The contractor shall also provide training at site to BMC personnel, regarding working & setting of numerical relays and hand over required evaluation and engineering tool of protection IEDs with all the required files for IEC61850.
16. The new control & relay panels shall be provided with fully programmable numerical protection relays (Make: Schneider / GE Alstom / ABB / Siemens) complying to IEC 61850 communication protocol together with engineering tool & relay communication files.
17. The front & rear panel shall be made out of CRCA sheet of thickness not less than 2 mm and powder coated. External colour shall match with the colour of existing line panels & the colour of the inner surface shall be glossy white.

18. The items provided on the panels shall have individual labels & tag numbers.
19. The internal wiring shall be carried out by using 1100V grade, PVC insulated, multi stranded, minimum 2.5 sq.mm. copper conductor with proper colour coding & ferrules.
20. The numerical relays and control & relay panel shall be suitable for existing operating voltage of 110V DC.
21. If any material or work which is not mentioned here but required for satisfactory completion of the work is deemed to be in scope of successful contractor at no extra cost to BMC.

SPECIFICATIONS:

1.1. This specification covers design, manufacture, assembly, testing before supply, inspection, packing and delivery and other basic technical requirements in respect of control and relay panel for 10 MVA Power Transformer (01 N0.). The equipment to be supplied against this specification are required for vital installations where continuity of service is very important. The design, materials and manufacture of the equipment shall, therefore, be of the highest order to ensure continuous and trouble-free service.

1.2. The equipment offered shall be complete with all parts necessary for their effective and trouble- free operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in tender or not.

1.3. It is not the intent to specify herein complete details of design and construction. The equipment offered shall conform to the relevant standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to perform continuous and satisfactory operations in the actual service conditions. The Tenderer / supplier shall bind himself to abide by these considerations to the entire satisfaction of BMC Engineers and will be required to adjust such details at no extra cost to BMC over and above the tendered rates and prices.

Technical Specifications:

A	**Transformer Control Panel**	
Sr. No.	DESCRIPTION	BMC REQUIREMENT
1.	Ammeter	Digital 3 ½, 96 Sq.mm. CL 1.0 (0-100A) Digit, CTR Primary programable up to 7999 A & Secondary 1A or 5A, 240V A.C.
2.	Multifunction Meter	3 Phase 4 Wire Fully Programmable Digital Programable CT Primary & Programable CT Secondary 1A or 5A, PT Ratio 100KV/110V
3.	Microprocessor based Facia Annunciator Window	24 Window Microprocessor based annunciator. Aux. Supply 110V D.C. with silence, lamp test, accept, reset Push Button& RS 485 Comm.
4.	Hooter/Alarm	Multi tone electronic hooter for trip & non trip alarm 96 Sq.mm. Aux. Supply 110V D.C.
5.	Tap Position Indicator	Reputed Make
6.	Oil Temperature Indicator	Reputed Make
7.	Winding Temperature Indicator	Reputed Make
8.	Push Buttons	Type Momentary Accept – Red Reset – Blue Test - Yellow
9.	Indication Lamps	LED 110V D.C. Close – Red Open – Green Spring Charge - Blue
10.	Breaker Control switch	25A, Type Spring Return to neutral. TNC Pistol Grip Handle Position: Trip-Neutral-Close Contacts: 3 Close, 3 Trip Key operated type, key to be removed in Both Position.
11.	Isolator Control Switch	25A, Type Spring Return to neutral ONC Pistol Grip Handle Position: Open-Neutral-Close Contacts: 2 Close, 2 Open Key operated type, key to be removed in Both Position.
12.	Semaphore Indicators for Isolators	48 mm Diameter, Aux. Supply 110V D.C.

B	Transformer Relay Panel	
1.	Transformer Diff. Relay	Schneider/ GE Alstom / ABB / Siemens Numerical Transformer Diff. Protection Relay (2 Winding). 06 Digital Input & 07 Digital Output contacts, & Built in REF, LBB Protection, Provision of RS 232 Port on Front side & 2 Rear port for IEC 61850 Communication Protocol, HV CTR 100-50/1A, LV CTR 1200-50/1A, NCTR 100/1A Aux. Supply 110V D.C.
2.	Over Current & Earth Fault Relay	Schneider/ GE Alstom / ABB / Siemens Numerical Directional 3 O/C + 1 E/F Relay with Instantaneous Highest Element 16 Digital Inputs & 08 Relay outputs, Provision of USB port on front for RS 232 Communication & 2 Rear port for IEC 61850 Communication Protocol, CTR 100-50/1A, PTR 100kV/110V AC Aux. Supply 110V D.C.
3.	Master Trip Relay	Schneider/ GE Alstom / ABB / Siemens Electromechanical 2 Element Tripping Relay Aux. Supply 110V D.C.
4.	Aux. Relays	Schneider/ GE Alstom / ABB / Siemens Electromechanical 3 Element Aux. Relays Aux. Supply 110V D.C.
5.	Trip Circuit Supervision Relay	Schneider/ GE Alstom / ABB / Siemens Electromechanical for CB Pre & Post close supervision
6.	Test Terminal Block	Relay test block with trip by pass contact for Tr. Diff. & Dir. O/C & E/F Protection relay
7.	Relay test plug	Relay test plug for above test block.

Cubical type	:	Duplex type IP 54/55
Dimensions	:	Should match with existing panels at Pise substation
Thickness of material	:	2.5 mm CRCA sheet steel
Exterior, interior & base frame paint	:	Epoxy based polyester powder coated (Thickness above 60 Microns) Shade: As per existing Panels at Pise Substation
Mimic diagram	:	Aluminium anodised strip mimic Horizontal: 10mm vertical: 7mm Color 100kV: Red, 3.6 kV: blue

Wiring / Ferrules	:	Flexible stranded copper conductors (FRLSH) with PVC insulation (minimum 2.5 sq.mm.) / Plastic sleeve type printed.
Inscription label	:	Aluminium anodized engraved letters
Terminals	:	Stud type terminals for control, annunciation & indication circuit, disconnecting type terminals for incoming AC, DC, CT & PT circuit (20% spare terminals shall be provided)
Earth bus	:	Tinned copper strip 25 x 6 mm.
Space heater	:	80w, 240v ac, 50 Hz.
AC / DC MCB	:	Reputed make / suitable rating
HRC Fuses	:	HRC cartridge type fuse for PT supply of suitable rating

Lightning/Surge Arrestor:

- Supply the 96 kV of gapless zinc oxide (ZnO) surge arresters along with all necessary accessories, including insulating bases, surge monitors/counters, pressure relief devices, terminal connectors, and mounting hardware.
- Submitting factory test reports / documents, and operating manuals.

2. Erection and Installation Scope

- Erection of the support structure and ensuring proper alignment.
- Assembling the arrester units vertically on the insulating base.
- Connecting the high-voltage terminal to the busbar or equipment being protected and connecting the lower part to the earth grid.
- Installing the surge monitor/counter on the base of the structure, ensuring a direct and reliable grounding path.
- Applying appropriate torque to all bolts and ensuring strict compliance with earthing standards to prevent injury.

3. Testing and Commissioning Scope

- **Inspection:** Physical inspection of the porcelain/polymer housing for damage or contamination.
- **Insulation Resistance:** Testing the insulation resistance of the arrester.

- **Site Tests:** Measurement of insulation resistance, leakage current and verifying the proper function of the surge counter.

Surge Monitor or **Surge Counter with Leakage Current Meter:**

- **Surge Counter:** 6-digit mechanical cyclometer, non-resettable, capable of counting at least 5 events per second.
- **Minimum Counting Current:** Suitable for counting surges as low as 100A to 200A for an 8/20 s wave.
- **Leakage Current Meter (mA meter):** Analog mA meter, typically with a scale of 0–5 mA or 0–30 mA.
- **Accuracy:** Usually ±10% for the counter and ±5% for the current meter.
- **Operating Conditions:** Suitable for outdoor use, typically IP67 rating, with viewing glass for reading.
- **Red/Green Zone:** The milli-ammeter should have a coloured scale, often indicating a red zone (e.g., >3 mA) for increased resistive current, signalling potential degradation or contamination.
- **Operating Principle:** Gapless zinc oxide (ZnO) Type.

2.5 IPS Aluminium Tubular Busbar

Scope of Work

The installation scope of work for a 2.5-inch IPS 2000A aluminium tubular busbar includes erection, assembly, bending, welding (aluminium welding) as per site requirement and testing of the tubular busbars for tightness and conductivity. While welding of tubular busbars proper size of inner sleeve must be used to achieve required strength. Ensuring strict vertical and horizontal alignment (levelling) of the busbars to reduce tension on clamps and equipment's connected.

Technical Requirements

Parameter	Requirement
Type	Aluminium Tubular Busbar
Nominal Size	2.5 IPS
Outer Diameter	73.03 mm ± 0.6 mm
Thickness	5.6 mm ± 1.12 mm
Material	Al. Alloy 63401 WP Range2 (IS-5082)
Rated Voltage	Suitable for 145 kV System
Rated Current	2000 A Continuous
Frequency	50 Hz
Short Time Withstand Current	31.5 kA for 3 Seconds
Peak Withstand Current	78 kA Minimum
Conductivity	Minimum 55% IACS
Ambient Temperature	Up to 50°C
Surface Finish	Smooth, defect-free and corrosion resistant

Busbar Clamps

Technical Specification for Busbar Clamps Suitable for 2.5 IPS Aluminium Tubular Busbar

1.The busbar clamps shall be suitable for supporting, connecting and tensioning 2.5 IPS Aluminium Tubular Busbar in 100 kV outdoor switchyards. The clamps shall ensure reliable electrical and mechanical performance under normal and fault conditions.

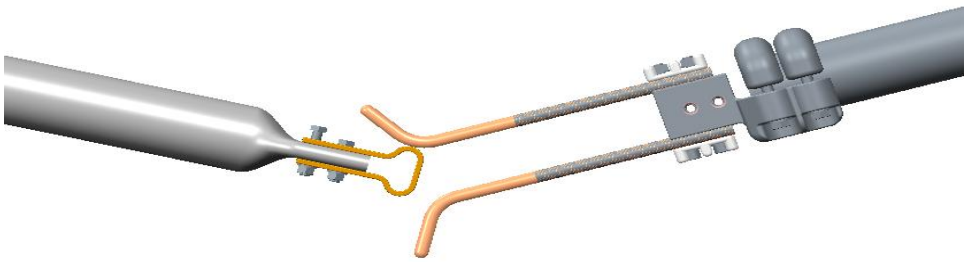
2. Material of Construction

Component	Material
Clamp Body	High strength cast aluminium alloy LM-6 / Grade 4600
Fasteners	SS 304 Stainless Steel
Spring Washers	SS 304
Contact Surface	Smooth machined finish
Bimetallic Strip (where required)	Aluminium-Copper factory welded.

Specification of Isolator/GOD:

1. Tenderer shall go through the specifications properly, get clear all the doubts, and queries with BMC Engineers before submitting the tender. Tenderer must visit the site before submission of tender.
2. Successful Tenderer shall supply 3 Nos. Of 145 kV Isolators, 3 pole centre break, complete current path up to 1600 A current carrying capacity as per the specifications attached.
3. The Successful Tenderer shall furnish the technical details, catalogues and drawings of the 145 kV Isolators to be supplied for approval of BMC Engineers before supply. It is to be noted that Type of contact should be Finger and Fist type (Springless) only as per drawing attached, for smooth operation and increased durability.

Contact Type: - Finger & Fist type



4. **Approved Make:** CG Power / ABB / Siemens / Hitachi /BHEL.
5. The new 145 kV Isolators supplied by the contractor shall conform to the latest relevant IS.
6. Adaptor frame, supporting structures and all hardware shall be hot dip galvanized and shall be supplied by the manufacturer.
7. The new 145 kV Isolators to be installed shall be suitably tested at site as per manufacturer's recommendations before installation. The necessary testing equipment's, meters etc. shall be arranged at site by the contractors.
8. Before installation, all the material shall be got approved from BMC engineers.
9. Necessary instructions given in manufacturer's instruction manual for packing, loading, unloading, transportation & installation etc. should be followed.

10. Necessary pre-commissioning tests shall be carried out on 145 kV Isolators after installation and before taking into service, as per instructions given in manufacturer's manual. The necessary testing equipment's, meters etc. shall be arranged at site by the contractors.

11**. Inspection:** The successful Tenderer shall offer the 145 kV Isolators for inspection by three BMC Engineers at Manufacturers works and shall give all the routine tests as per relevant I.S. The 145 kV Isolators shall be supplied at site, only after clearance by BMC engineers.

TECHNICAL SPECIFICATIONS

DESCRIPTION		REQUIRMENT	
1	Make	:	ABB/CGL/SIEMENS/HITACHI/BHEL
2	Voltage	:	145 kV
3	Insulation Level	:	650kVp
4	Normal Current	:	1600 A
5	Short time withstand current	:	40 kA-3 S
6	Frequency	:	50 Hz
7	Weight	:	As per manufacturer standard
8	Type of Contact	:	Finger & Fist type (Springless)
9	Type& Service	:	Horizontal Center Break, Outdoor
10	Type of Operation	:	Mechanically gang operation
11	Number of Phases	:	Three
12	Operating Motor	:	3 Phase 440V AC
13	Control Supply	:	110 Volt DC
14	Standard to which equipment		IEC 62271-102, IEC62271-1

TECHNICAL SPECIFICATION OF 3 CORE 3.3 KV 400 SQ MM ALUMINIUM CABLE

(1) Supply of 3C, 3.3 KV, 400 sq.mm. Aluminium conductor, UE grade, G.I. Round Armour XLPE cable

a) 3C, 3.3 KV, 400 sq.mm. Aluminium conductor, UE grade, G.I. round armour XLPE cable shall be used for connecting Transformer secondary to 3.3 kV circuit breaker at Pumping Station.

b) Cable shall be capable of withstand satisfactorily without damage during the transportation to site, installation at site and operation under normal and short circuit conditions of the various system to which the respective cables are connected and when operated under the climatic conditions prevailing at the site as indicated in these specifications.

c) Cables shall be capable of giving satisfactory performance when laid in trays, trenches, conduit and ducts and when directly buried in the ground.

d) Cable shall be capable of operating satisfactorily under a power supply system voltage variation of ±10% and frequency variation of ±2%.

e) Cable shall have heat and moisture resistance properties.

f) Cable shall be of reputed make.

g) Cable shall be laid in following conditions:

i. In air - Ambient temperature of 40°C
ii. In ground – Ground temperature of 30°C
iii. In conduits – Space factor not more than 60°C.
iv. Depth of laying in ground – 900mm

h) The maximum conductor temperature for operation under normal rated current carrying conditions and under short circuit condition shall be as per relevant IS.

i) Cable shall be XLPE insulated and shall confirm to relevant IS specifications.

j) The contractor should verify the length of 3.3 KV cable required before procuring the cable. No joint shall be permitted.

k) The tenderer must visit Pise substation for exact measurement of cable before participating in the tender. Any discrepancy in length of cable, the tenderer has to supply it to BMC at no extra cost.

(2) <u>Laying of cable in the existing cable trays and trenches and underground trenches</u>

3 C, 3.3 KV, 400 sq.mm., Al. conductor, UE grade, GI round armour, XLPE cable shall have to lay from Transformer secondary to 3.3 kV circuit breaker at Pumping through existing or new cable trenches and concrete pipes. Identification tag shall be provided on each end cable with non corrosive wire. IS codes shall be followed for bends and turns in cables while laying cable to avoid knicks & sharp bends.

NOTE: The old cable trays in existing cable trenches are to be replaced by new GI ladder type cable trays with support.

(3) <u>Termination</u>:

The termination of 3C, 3.3 KV, 400 sq.mm. Al. conductor, UE grade XLPE cable shall have to carry out at both ends i.e. Transformer secondary box & 3.3 kV Circuit Breaker at Pumping Station. (Six termination at secondary box, six terminations at 3.3 kV breaker & two termination for transformer neutral to NGR. Total 14 terminations). The lug shall be of suitable rating & proper crimped.

(4) <u>Testing & commissioning of power cable</u>:

Before laying of cable following test shall have carry out on the cable.

i) Continuity of conductor.
ii) Insulation resistance between conductor & earth.
iii) Insulation resistance between conductors.

After completion of laying & termination work following pre commissioning test shall have carry out

i) HV test
ii) Absence of cross phasing.
iii) Firmness of termination.
iv) Continuity test of conductor.
v) Insulation resistance between conductor & earth.
vi) Insulation resistance between conductors.

Earthing Pit:

SPECIFICATIONS FOR EARTH ENHANCING COMPOUND FOR EARTH PITS

1.The earth enhancing compound shall be conform to IEEE 80 2000 Clause 1.45 D

2.The earth enhancing compound should have the following properties.

a) Ionic property to create ions for easy conduction.
b) The compound shall enable to disperse the irons equally in the earth pits.
c) The compound should expand 18-20 times to remove entrapped air (bad conductor of electricity) and to create strong conduction between electrode and soil.
d) The compound should diffuse in the soil to create conductive silicate. The silicate should expand into the soil with edge of the earth pits and result in progressive reduction of earth pit resistance.

e) The compound should have a property to assist in absorbing humidity from the neighbouring soil to keep the earth pit moist, which in turn helps better conduction.

f) The compound should have the property to ensure moisture is retained throughout the year irrespective of the weather condition without addition of water during the life of the earth pit.

3.The product should be tested and certified at Central Power Research Institute (CPRI) for long term stability of earth pits.

4.The compound should be Terec+ or equivalent.

G.I. Pipe & Earthing Strip:

Size 50 mm dia. NB
Length - 3 Meters
Thickness - 4.47 mm
Confirming to IS 3043: 1987
Pre-punched holes and galvanized to more than 30 Microns of zinc coating thickness.
Earthing Strip: 75 X 8 mm for main grid 50 X 6 mm for equipment earthing & 25 X 3 mm for marshalling box earthing GI with galvanize coating minimum 86 micron.

SITC of Shield Pole and Shield Wire System for Lightning Protection of 100 kV Substation

The scope of work includes, but not be limited to, the following:

1. **Design and Engineering**
    - Survey of substation area and preparation of lightning protection layout.
    - Design of shield pole locations, heights, foundations and shielding angles in accordance with relevant standards.
    - Calculation of protected zone ensuring complete coverage of transformers, switchyard equipment and associated structures.
    - Latice type GI angel bolted structure (Tentative Height 18 mtr.) to be designed for this shield pole. For sample of design refer the installed shield pole at 100 kV Pise substation near 7.5 MVA Transformer No. 4
2. **Supply of Materials**
    - Galvanized steel shield poles of required height and strength.
    - Galvanizing shall be done after fabrication work.

- Galvanized steel shield wire/EHS (Extra High Strength) galvanized steel wire suitable for lightning protection.
- Pole tops, wire clamps, tension fittings, turnbuckles, dead-end fittings, suspension clamps and accessories.
- Earthing materials including GI flats, earth electrodes, connectors and hardware.
- Foundation anchor bolts, nuts, washers and miscellaneous structural steel items.
- All fasteners shall be hot-dip galvanized.

3. **Civil Works**
    - Excavation for shield pole foundations.
    - Construction of RCC foundations including anchor bolt setting.
    - Backfilling, compaction and disposal of surplus excavated material.
    - Provision of foundation earthing connections.
4. **Erection and Installation**
    - Erection, alignment of shield pole.
    - Stringing, tensioning and sag adjustment of shield wires.
    - Installation of all fittings, clamps and accessories.
    - Connection of shield poles and shield wires to the station earthing grid.
    - Ensuring adequate ground clearance and electrical clearances from live equipment.
    - Material test certificates and galvanization test certificates.
    - As-built drawings indicating shield pole locations, heights and earthing connections.

BUS POST INSULATOR (110KV SOLID CORE) SPECIFICATIONS

- Highest System Voltage: 123 kV
- Nominal System Voltage: 110 kV
- Rated Lightning Impulse Withstand Voltage (BIL): 550 kV (Peak)
- Power Frequency Withstand Voltage Dry 250 kV & Wet 230 kv
- Corona Extinction Voltage: Minimum 105 kV

- Minimum Creepage Distance: 3075 mm
- Insulator Type: Cylindrical solid core, single stack
- Overall Height: 1220 mm (± 2.0 mm)
- Top Metal Fitting Pitch Circle Diameter (PCD): 127 mm 4-tapped holes M-16
- Bottom Metal Fitting Pitch Circle Diameter (PCD): 184 mm 4 holes of dia. 18
- Shed Profile: Meets all requirements of IEC 60815
- All ferrous parts hot dip galvanizes as per relevant IS
- Galvanizing thickness shall be Avg. 86 micron minimum

SITC of GI Support Structures

The work comprises the design, fabrication, supply, transportation, erection, testing and commissioning of hot-dip galvanized (GI) steel support structures for bus post insulators, CT's, LA and other equipment's, complete with base plates, bracings, gusset plates, fasteners, foundation bolts and other required accessories. The work includes necessary alignment, leveling, fixing, earthing connections and associated civil works.

The support structures shall be fabricated from structural steel. The structures shall be designed to withstand the dead load of the equipment, wind loads, busbar and conductor loads, short-circuit forces wherever applicable, and other relevant mechanical loads.

The structures shall comprise suitable columns, beams, bracings, base plates, stiffeners, gusset plates, foundation bolts, nuts, washers and other accessories required for safe and stable mounting of bus post insulators, lightning arresters and 145 kV current transformers.

All structural steel members shall be hot-dip galvanized after fabrication in accordance with IS 4759 (latest edition). For steel components having a thickness of 6 mm and above, the minimum average zinc coating thickness shall be 86 microns. For components of other thicknesses, the applicable requirements of the relevant standard shall be followed.

All bolts, nuts and washers shall be of suitable grade and shall have appropriate corrosion protection as per the relevant standards. The structures shall be accurately fabricated, properly aligned and installed to ensure adequate mechanical strength, stability and the required electrical clearances for safe operation and maintenance of the equipment. Suitable provisions shall be made for connecting the metallic structures to the substation earth grid.

The work includes erection, alignment, leveling, fixing and grouting, along with foundation bolts and associated civil works.

Substation Lighting:

SITC of Mast Light Poles and Post Top Lanterns as per site requirement. The structure of Mast light Pole should be the same as existing Mast Light Poles near 7.5 MVA Transformer No.4 bay at 100 kV Pise Substation switchyard. On Mast light Pole minimum four fittings of 210W LED Flood Lights to be installed & Post top lantern minimum 50W handi type lanterns to be installed.

3.3 KV H.T. Panels:

Scope of Work: - 3.3 kV HT Panels (1No-2000A Incomers +1No.-2000A Bus Coupler + 1 Nos. of Bus PT = Total 03 Nos.)
Applicable Standards:

IEC62271-100, 200 - Metal enclosed Switchgear and Control Gear

IS3156 – Voltage Transformers

IS2705 – Current Transformers

IS 3231and 3842 – Protection Relays

CONSTRUCTION: -

VCB Switchboard Totally enclosed, Single Bus Bar, Floor mounted Metal Clad, Indoor type Flush Front, Horizontal Draw out & Horizontal Isolation Vacuum Circuit Breaker having 'M2 Class type Tested mechanism' for installation in 3 Wire, 50Hz, 3.3 KV, 26.3 kA for 3 Sec. effectively Earthed supply system comprising of housing for Breaker, mechanical interlocks, safety shutters, 06 Nos Isolating Plugs and a VCB Trolley with three vacuum interrupters & epoxy supports insulators and self-aligning finger type isolating contacts, Truck having integral locking-in Device for insertion and withdrawal of VCB complete with necessary interlocks. Manual charged independent spring closed/spring tripping, trip free, operating mechanism with manual closing and tripping push button. Mechanical indication viz. Breaker Closed/Open, Spring Charged/Discharged Mechanical Operation Counter, Electrical Release Coil, Breaker operated auxiliary Switch with 4NO+4NC and spare Contacts & 230VAC Operated Motorized Mechanism + Manual Hand Operated mechanism. All HT panels shall be with fully draw out type breaker carriages, compartmentalized and extendable on either side

design. The panel shall be with Aluzinc enclosure (except back and front) of minimum 2mm thick for non-load bearing and 2.5mm for the load bearing members with protection class of IP4X. Make of panel, VCB, relay, vacuum interrupter and meter must be same.

The closing and shunt-trip releases shall be suitable for operation on 48V DC supply or as per site condition.

The breaker design should have top and bottom separate arms for power connection. The single arm design with horizontally placed vacuum bottle shall not be acceptable.

The make of vacuum Circuit breaker, numerical relay, Vacuum bottle, temperature sensors must be same as of offered make.

Rated short-time current (3 Sec) For Incomer & Outgoing feeders: 26.2 kA.
The panels shall be with circuit breaker in fully draw out (on floor) design. The insulators shall be made of high epoxy and housed in separate chambers. The bus bar and cable chambers should be fitted with bolted covers with gaskets and should be fixed to avoid direct access to live parts immediately after opening respective covers. The bus bars and jumper connections shall be insulated to full maximum operating voltage.

Each VCB Trolley be essentially horizontal isolation and horizontal draw out type only and shall have a position at ground level with three distinct positions inside the cubical; i.e. service, test and isolated. The switchgear shall have complete interlocking arrangements at the fully inserted and fully drawn out and test positions. Withdrawal of the breaker should not be possible in ON position in any case.

The Complete Switchboard shall have the naturally ventilated atmosphere and it shall be able to control and contain the high short circuit energy under internal arc conditions and ensure safety of the operating personnel in case of faults. Panels must be type tested for internal arc fault of 26.3 kA for 1seconds. All VCB compartments shall be provided with suitable capacity space Heaters for arresting moisture.

For continuous operation at specified ratings, temperature rise of the various switchgear components shall be limited to the permissible values stipulated in the relevant IEC standards.

The Switchgear and components thereof shall be capable of withstanding the mechanical forces and thermal stresses of the short circuit current without any damage or deterioration of material.

Circuit breaker shall not produce any harmful over-voltage during switching off unloaded lines and unloaded transformers.

Cable Box is to be provided as such to enable entry of XLPE Cable of 3Core x 300sqmm x 2 Runs from the bottom & rear entry. All connecting bus work shall have the same continuous rating as associated switchgear bus and shall be fully braced for the listed short circuit current. **The Incomer should be suitable for 6 cable connection (cable extension box if needed to be considered).**

BUS BARS AND CONNECTORS: -

The bus bars and connectors shall be made of high-grade **Electrolytic Copper**.

The bus bars shall have rectangular cross sections and amply sized to carry the rated continuous current under the specified temperature rise as per IEC. The main buses and connections shall be of high conductivity Copper sized for specified current ratings with maximum temperature as per IEC.

The bus bars and their connections shall be capable of withstanding, without damage, the thermal and mechanical effects of through fault currents equivalent to the short time rating of the switchgear.

Bus bars and feeder/ jumper connection shall be sleeved with heat shrinkable sleeves with adequate phase/ground clearances. Insulating sleeves for bus bars and cast-resin shrouds for joints shall be provided, suitable for maximum temperature rise of bus bars.

All buses and connections shall be supported and braced to withstand stresses due to maximum short circuit current and also to take care of any thermal expansion.

Bus bars shall be wrapped with suitable HT PVC sleeving.

Note: The existing adjacent Bus bars are of 1600A capacity and Proposed Bus bars are of 2000A capacity so the contractor has to make suitable arrangement for these busbar connections. Any other material/equipment/adaptor panel if required is in scope of the contractor at No Extra Cost to BMC.

SAFETY SHUTTER DEVICES: -

A set of non-metallic shutters shall be provided to cover each 3- phase group of stationery isolating contacts. Each set shall be capable of being individually operated and individually padlock closed.

The shutter shall open automatically by a positive drive initiated by the movement of the circuit breaker.

The closing operation shall also be automatic, either by positive drive or by two independent means, each capable of operating the shutter alone.

When padlocked, the shutters shall completely shroud the Spout Assembly, to restrict access to the stationary contacts.

Bus bar shutters shall be clearly and indelibly labeled 'BUSBAR SIDE'. Circuit shutters shall be clearly and indelibly labeled 'CABLE SIDE'.

INSULATORS

Insulators of moulded or resin bonded material shall have a durable, non-hygroscopic surface finish having a high anti- tracking index.

CIRCUIT BREAKERS GENERAL REQUIREMENTS

The truck (floor) mounted circuit breaker shall be capable of making and breaking the specified fault currents without straining or damaging any part of the switchgear. The circuit breaker shall be stored energy closing type, electrically operated with tripping mechanism. The circuit breaker shall be provided with 6NO + 6NC on the breaker. All the contacts shall be wired up and terminated in a terminal block.

Vacuum Circuit breaker shall be triple pole, single throw type.

It shall also be capable of closing on no-load without suffering undue mechanical deterioration. The maximum make-time shall also be not exceeded.

It shall not be possible for the moving contacts to move from the open position unless the spring is charged sufficiently for satisfactory completion of the closing operation.

The direction of motion of the handle, for manual spring charging shall be marked. A device indicating when the spring is charged fully shall be also provided. Manual spring charging must be possible without opening VCB chamber door.

Spring operated mechanism shall be complete with motor, closing spring, opening spring with limit switch for automatic charging and all necessary accessories to make the mechanism a complete operating unit.

Motors and their electrically operated auxiliary equipment for charging a spring shall operate satisfactorily between 85% and110% of the rated supply voltage (230V AC) also suitable protective MCB with D curve characteristics shall be provided for 230V AC spring charging motor.

When the breaker is closed, by releasing the closing spring, the closing spring should automatically get charged by the spring charging motor. Spring charging time shall not exceed 15 seconds.

After failure of power supply to the spring charging motor, at least one open-close-open operation of each circuit breaker shall be possible.

Breaker operation shall be independent of the motor operation, which shall be used solely for compressing the closing spring manually during failure of power supply to spring charging motor.

Closing action of the circuit breaker shall compress the opening spring ready for tripping.

It shall not be possible to render the electrical tripping feature inoperative by any mechanical locking device.

The breaker operating mechanism shall be electrically and mechanically trip-free in all positions. The breaker should also be provided electrical anti-pumping devices.

The breaker shall comprise of three separate, identical single pole interrupting units, operated through a common shaft by a sturdy operating mechanism.

Safety interlocks and features required for all CB Panels as under.

VCB cannot be engaged or withdrawn unless it is in open Position.

Breaker compartment shall have Front Door with hinges & shall be provided with metallic handle & door locking facility.

Safety shutters operate automatically when CB is withdrawn.

Low voltage plug and socket cannot be disconnected with ON position except in TEST/ISOLATED position.

CURRENT TRANSFORMERS: -

Dual core CTs shall be employed for measuring instruments and automatic tripping of circuit breakers on overload, Earth Fault and short circuit protection. CT can be mounted on cable side of breakers with easy accessibility. All the CT's shall be cast resin insulated Bar primary/Wound secondary type. All secondary connections shall be brought out through conduits to terminal blocks having provision of shorting links. The primary& secondary connections shall be clearly labeled.

Shall conform to IS: 2705 (parts 1-4) 1992 with its latest CTs amendments.

VOLTAGE / POTENTIAL TRANSFORMER (PT): -

The voltage transformers shall be insulated for full voltage rating and shall have an accuracy class as per specification.

PTs shall conform to IS: 3156 (parts 1-4): 1992 with its latest amendments.

PT secondary MCB of full interrupting rating shall be provided. The MCBs shall be so located that they can be replaced with safety while the main circuit is alive.

CONTROL SWITCHES/SELECTOR SWITCHES

Control and meter selection switches shall have integral name plate and for all other devices, the same shall be located below the respective devices. Instrument and devices mounted on the face of the panels shall also be identified on the rear with the same number.

All control switches shall be rotary, back connected type having contact mechanism cam operation.

The handle of control switches used for circuit breaker operation shall turn clockwise for closing and anti- clockwise for tripping and shall be spring return to neutral from close/trip with lost motion device.

The control switches, operating handles, meters, relays etc. shall be mounted at the front of the switchgear as per approved drawings. Breaker Control switches wherever provided shall be so designed that when released by the operator it shall automatically return to a neutral position. They shall be fitted in sequence with lock to avoid inadvertent operation and shall be arranged such that after passing the "closed" position the control switch cannot be moved into the "Closed" position again without passing the "open" position. Each panel shall have indicating lamps for" ON"," OFF", "TRIP", "TRIP CIRCUIT HEALTHY", "TRIP RELAY HEALTHY" and spring charged.

Auxiliary Supply: **48V DC**

Suitable MCB shall be provided for individual circuits for protection and also for isolation from bus wire without disturbing the other circuits. Bus wires from panel to panel shall be wired through necessary control terminals.

Panel heaters and thermostats shall be provided in all the panels.

CONTROL FUSES

All fuses shall be of HRC link type conforming to IS control. Fuses shall generally be mounted on the LT chamber of the panels. All fuses and links shall be provided with suitable identification labels.

CONTROL WIRING

Stud type terminals with identification ferrules properly numbered shall be used. Local dependent marking as well as remote end dependent marking may be indicated in the ferruling at terminal blocks. Interlocking type ferrules shall be used. All wires carried within the switchgear enclosure shall be FRLS insulated and neatly arranged/bunched

properly and taken with proper insulated supports so as to be readily accessible and to be easily replaceable. Wherever necessary the wires should be run in PVC conduits & Cable Ducts and the wiring should be routed so that the same remains away from areas where electrical flame or flashover may occur. No conduit or cables shall be carried through the bus bar chamber or near to the live sockets even when the breaker is drawn out.

The potential transformer wiring shall be done by FRLS insulated, 1100 V grade multi stranded flexible copper conductor of size 2.5 sq. mm and all the current transformer and DC control wiring shall be of the same type of cable as specified above with conductor size of 2.5 sq. mm. The color coding shall be as per IS 375.

AC and DC wiring are to be distinguishable function wise; AC and DC terminals are to be separated by shrouded terminal separators.

All spare contacts of switches / relays shall be wired up to the terminal blocks.

All CT wiring shall be terminated on shorting type terminals & one end will be properly earthed.

NAME PLATE

Suitable anodized Aluminum engraved nameplate shall be provided on all the switchboards and individual panels.

CABLE BOXES / CABLE CHAMBER

Cable boxes/cable chamber shall be suitable for the type and size of cable specified. The position of the cable boxes shall be such that the cables can be safely taken and carried through trench at the rear bottom of the switchgear line up and the jointing carried out in a convenient and satisfactory manner. The cable termination arrangement for multiple cables shall permit connection and disconnection of individual cables without disturbing the other cables.

Control cables shall not be taken through any live part chamber like bus bar chamber etc., and preferably taken through a cable alley in the front of the panel and terminated directly in the metering/relay chamber. Necessary provision in the panel has to be made for earthing lugs of each cable armor earthing.

PAINTING

Painting shall be done with tank process, Epoxy based powder coated of shade 7032 or 7035 as per IS-5. Painting process is only applicable for CRCA part of panels and not applicable for Aluzinc panels.

Current Transformers:

1. Incomer: -

All the CTs shall have ratio of 2000/5-5-5 A.

CTs shall be of **class 0.2**, 10VA Burden for metering (Core1), **class 5P20,** 10 VA burden for Protection (Core2) and Class- PS or Suitable for differential protection (Core3).

2. Bus coupler: -

All the CTs shall have ratio of 2000/5-5 A.

CTs shall be of **class 1,** 10VA Burden for metering (Core1), **class 5P20,** 10VA burden for Protection (Core2).

Potential Transformer:

Horizontally withdrawable type resin cast insulated potential transformer having ratio of 3.3 kV/RT3/ 110 V /RT3/110 V/3 shall be provided in the panel. The PT shall be easily accessible for inspection and isolation, whenever required. The PT shall conform to IS: 3156 or 4146 or relevant IS standard, amended up to date.

Relays: -

1) Incomer Feeders: -

The Incomer feeder shall have following relays: -

IDMT Over current + INST Over current + IDMT Earth Fault + INST Earth Fault

Trip CKT Supervision relay

Lockout Relay

Anti pumping Relay

2. Bus Coupler Feeder: -

The Bus Coupler Feeder numerical relay shall have following protections:

IDMT Over current + INST Over current + IDMT Earth Fault + INST Earth Fault.

Separate relays to be provided for following

Trip CKT Supervision relay

Lockout Relay

Anti pumping Relay

3. Bus Potential Transformer Feeder: -

PT Feeder shall have following relays: -

Under Voltage + Over current + Earth Fault+ Under Frequency

Meters: -

1. Incomer feeder: -

The Incomer feeder shall have following meters: -

Analog Ammeter (0-2000A)- 1No.

Analog Voltmeter (0-4000V) – 1No.

Digital Load Manager – 1 No.

Smart Demand Controller – 1 No

2. Bus coupler feeder: -

The Bus Coupler feeder shall have following meters: -

Analog Ammeter (0-2000A)- 1 No

3. Bus PT feeder: -

The Bus PT Feeder Shall have following meters: -

Analog Voltmeter- (0-4000V)-1No.

Indications: -

Incomer & Bus coupler feeder shall have indications: -

Breaker OFF

Breaker ON

Auto Trip

Trip CKT healthy

Spring Charge

Service Position

Test Position

Bus PT: Test Position & Service Position indication shall be provided for Bus PT Feeders.

The Bus PT panel shall have std indication as per existing scheme.

Switches: -

1. Incomer feeder: -

Ammeter selector switch, Local Remote switch, TNC switch, Voltmeter selector switch and Heater ON/OFF Switch shall be provided for incomer feeder.

2. Bus Coupler Feeder: -

Ammeter selector switch, Local Remote switch, TNC switch, and Heater ON/OFF Switch shall be provided for Bus Coupler feeder.

3. Bus PT Feeder: -

Voltmeter selector switch and Heater ON/OFF Switch shall be provided for Bus PT feeder.

Drawing s and Manuals:

The successful bidders shall submit-

a) Detailed wiring diagrams for control circuits such as tripping circuit, space heaters, various interlocks, relays, meters, indication lamps, HT Panel wiring diagram and truck wiring diagram etc.,

b) General arrangement/Schematic drawings of the HT Panel drawn to the scale, with all dimensions and ratings, equipment details etc.,

c) Quality assurance plan: -

For prior approval of BMC, Detailed QAP along with Detailed wiring diagrams shall be submitted. Manufacturing of the breakers and the panel shall commence after obtaining above approval.

CIVIL WORK:

1. Site clearance, removal of vegetation, debris, unwanted materials and levelling of the proposed transformer bay area.

2. Site survey and marking of the transformer bay layout, including the locations of the power transformer and all allied electrical equipment, as per approved drawings.

3. Excavation for foundations of all equipment, including Power transformer, Soak pit, NGR, NIFPS, Circuit breaker, Current transformers, Isolators, Lightning arresters, Bus support structures, Mast light Pole, Post top lanterns, Shield Pole, Earth pit with earthing grid, Cable Trenches and other associated equipment.

4. Preparation of foundation for Control & Relay Panel & NIFPS Control Cubical in Control Room with necessary cable trenches.

5.Construction of RCC foundation of the Power Transformer, including embedded plates, foundation bolts and rail/roller arrangements as per approved drawings including foundation for NGR, NIFPS and laying pipes for NIFPS oil drain up to existing oil sump in switchyard.

8. Construction of RCC foundations for 145 kV SF_6 circuit breakers, including foundation bolts and equipment mounting arrangements as per manufacturers instruction manual.

9. Construction of RCC foundations for GI Support structures of current transformers (CTs), Isolators, Lightning arresters, Bus support structures, Mast light Poles, Post Top Lanterns, Shield Pole and associated equipment's

10.Construction of new RCC cable trenches or extension of existing RCC cable trenches including GI cable trays, supports and suitable FRP trench covers as per site requirement.

11. Backfilling around completed foundations and structures with approved earth, including layer-wise compaction.

12. Providing and spreading approved gravel/stone metal in the transformer bay area, including levelling and dressing.

13. Construction of walk ways and equipment movement path wherever required.

14. Construction/Repair of switchyard extension bay fencing as per site requirement.

15. Removal of surplus excavated earth, construction debris and unwanted materials from the site.

16. Final levelling, dressing and restoration of the transformer bay area, including making good any surfaces disturbed during execution.

Note: All civil works shall be executed as per approved drawings, applicable IS codes (Wherever required), site requirements and the directions of the BMC Engineer. The scope shall include all materials, labour, machinery, shuttering, reinforcement, concreting, curing, testing, finishing and incidental works necessary for satisfactory completion of the subject works.

Special Condition – Make of Power Transformer and OEM Authorization

The power transformer is a critical and major component of the electrical substation, directly affecting the reliability, continuity, and safety of the power supply system. In view of the existing substation infrastructure, operational requirements, and the need for standardization of equipment, the power transformer to be supplied under this contract must be compatible to the existing power transformer installed at the substation.

This requirement is intended to ensure uniformity in design, construction, accessories, protection and control interfaces, maintenance procedures, and technical characteristics, thereby facilitating interchangeability of compatible spare parts, efficient inventory management, ease of maintenance, availability of technical support, and reduction in equipment downtime during breakdowns or maintenance activities.

Accordingly, the bidder shall submit a valid authorization letter issued by the Original Equipment Manufacturer (OEM) of the specified make, specifically authorizing the bidder to participate in the tender and supply the power transformer under the subject contract. The authorization shall clearly identify the tender/work and shall be valid as on the date of submission of the bid.

Failure to submit the requisite OEM authorization along with the bid, the bidder shall be treated as Non-responsive and the bid is rejected outrightly.

Sr. No	Item Description	Rating	The Make must be adhered to	Prescribed format on Pg.
1.	Power Transformer	10 MVA	CG Power & Industrial Solutions Ltd.	207

Other Conditions:

The bidder shall submit following documents with technical Packet-B

1. Data sheets for Power Transformer
2. Data Sheet for 145 kV SF6 Circuit Breaker
3. Data Sheet for Breaker Health Monitoring System
4. Work Experience Certificate for BHM as mentioned in scope of work for BHMS
5. Data Sheet for 145 kV Current Transformer
6. Data Sheet for 145 kV Isolator/GOD

All Data Sheets are attached in Appendix Section.

Note:

Permissions: The contractor is responsible for obtaining all necessary permissions of Govt. authorities required for the captioned subject work.

SECTION 11

FRAUD AND CORRUPT PRACTICES

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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 relavant 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 persons 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 Financer 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 acts intended to materially impede the exercise of the Financer's inspection and audit rights provided.

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, noncompetitive levels.

x. a "party" refers to a participant in the procurement process or contract execution.

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SECTION 12

PRE BID MEETING

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PREBID MEETING

Pre-bid meeting of the interested parties shall be convened at the designated date, time and place. A maximum of three representatives of each Applicant shall be allowed to participate on production of authority letter from the Applicant.

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.

Venue for Pre-bid Meeting

Brihanmumbai Municipal Corporation
Hydraulic Engineer's Office,
Engineering Hub,
Worli, Mumbai – 400 018

Date & Time of Pre-bid meeting is mentioned in Header-Data

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SECTION 13

APPENDIX

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FORM OF TENDER

To,

The Municipal Commissioner
For the Brihanmumbai Municipal Corporation

Sir,

I/ We have read and examined the following documents relating to,

_____

_____

_____

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 and B.

viii. 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 con-tract 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 hereby 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 specifications 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 Brihanmumbai Municipal Corporation Act, not to accept this tender.(Subject to the 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 further agree that, I/we shall register ourselves as ‘Employer’ with the Bombay Iron and Steel Labour Board’ and fulfill all the obligatory provisions of Maharashtra Mathadi, Hamal and other Manual workers (Regulation of Employment and Welfare) Act 1969 and the Bombay Iron and Steel unprotected workers Scheme 1970.

9. “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.

10. “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.…… A/c No. ……

Full Name and private residential address of
all the partners constituting the Firm

1.	……	Name of Bank
2.	……	……
3.	……	Name of Branch
4.	……	……
5.	……	Vender No……

AGREEMENT FORM

Tender / Quotation dated ……. 20…

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(SE) (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(SE) 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:-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:-The following documents shall be deemed to form and be read and constructed as a part of this agreement viz.

The letter of Acceptance

The Bid:

Addendum to Bid; if any

Tender Document

The Bill of Quantities:

The Specification:

Detailed Engineering Drawings

Standard General Conditions of Contracts (GCC)

All correspondence documents between bidder and BMC 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.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 seals to 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

_____

_____

Full Name
Address

Signed by the D.M.C. (S.E.) in the presence of

Ex. .... City/ WS/ ES

_____

_____

D.M.C. (S.E.)

The Common seal of the Brihanmumbai Municipal Corporation was hereunto affixed on the ……..... 20 in the presence of two members of the Standing Committee.

1.

2.

1.

2.

And in the presence of the Municipal Secretary

Municipal Secretary

ANNEXURE " A " (Not Applicable)

Name of work:

1. Chief Engineer (_____)
2. The Engineer for this work: Dy.Ch.Eng.(_____)
   Exe.Eng.(_____)
3.
4. **Estimated cost of Tender:**

Sr No	Description of work	Total Amount Rs.
1	Civil Work	
2	Electrical Work	
3	Total Amount	

3.

Earnest Money (1% of the Estimated cost)	

4. Time Period

1.	Contract as a whole Period completion	
2.	Part or Groups of items	
	i)	i)
	ii)	ii)
	iii)	iii)

Percentage to be charged as supervision charges for the work got executed through other means …….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.

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.

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

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 disfavour 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:

"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;

"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;

"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"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 nochange 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

Annexure- D (Not Applicable)

~~Rate Analysis~~

~~Item Desciption~~

~~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~~				
~~4~~	~~Total of all components~~				
~~5~~	~~Overhead &Proffit 15% on 4~~				
~~6~~	~~Total Rate (4+5)~~				
~~7~~	~~Per unit rate~~				

Sign & Seal of the Tenderer

DATA SHEET
10 MVA 100/3.6 KV POWER TRANSFORMER

Sr. No.	Description	BMC Requirement	Offered by Bidder
1.	Make	CG Power, Siemens, Bharat Bijlee, BHEL, Kirloskar Electric, Alstom, ABB	
2.	Type	Core type	
3.	No. of phases	3	
4.	Frequency	50 Hz	
5.	Rated kVA	10000 kVA (10 MVA)	
6.	Rated Voltage H.V.	100000V (100 kV)	
7.	Rated Voltage L.V.	3600V (3.6 kV)	
8.	Connection of H.V. winding	Delta	
9.	Connection of L.V. winding	Star	
10.	Vector Group	Dyn11	
11.	Type of cooling	ONAN	
12.	Taping on	H.V. Winding	
13.	Type of tap changer	On load tap changer	
14.	No. of steps of tap changer	21	
15.	Tap range	-15 % to + 10 % (85kV to 110kV)	
16.	% Impedance	As per IS 2026 (Latest Edition)	
17.	Painting	Light Admiralty Grey or as per IS	
18.	IS	Confirming to IS 2026 (Latest Edition)	

ORIGINAL EQUIPMENT MANUFACTURER SIGN & STAMP

BIDDER'S SIGN & STAMP

DATA SHEET
145 KV SF6 CIRCUIT BREAKER

Description	BMC Requirement	Offered by Bidder
Make	Siemens/CG Power/ABB	
Rated Voltage	145 kV	
Rated lightning impulse withstand voltage	650 kVp	
Rated power frequency withstand voltage	275 kV	
Rated frequency	50 Hz	
Rated normal current	3150 A	
Rated short - circuit breaking current	40 kA	
Rated short circuit duration	3 s	
Rated out - of - phase breaking current	10 kA	
Rated short time out - of - phase breaking current	100 kA	
First pole to clear factor	1.5	
Rated Line charging breaking current	50 A	
Rated single capacitor charging breaking current	400 A	
Rated Pressure of SF6 at +20 degree (Gauge)	6.0 bar rel	
Weight of SF6 filling (Approx.)	6.6 kg	
Control Voltage	110 V DC	
Operating Mechanism voltage	240 V AC	

ORIGINAL EQUIPMENT MANUFACTURER SIGN & STAMP

BIDDER'S SIGN & STAMP

DATA SHEET of BHMS for SF6 Circuit Breaker
(Circuit Breaker health Monitoring System)

(To be submitted on the letterhead of Original Equipment Manufacturer of BHMS and shall be signed in blue ink)

Sr. No.	Description	BMC's Requirement	Offered By OEM
1	Specifications	Closing Coil Current Monitoring	
		Tripping Coil Current monitoring	
		Spring Charging Motor Current Monitoring	
		Space Heater Current Monitoring	
		SF6 Gas Pressure Level Status (Low/High)	
		Additional 4 current based inputs	
2	Parameters	All Sensors, processor & LED indication in a single unit	
3	Dimensions	Depth- 220mm Width- 55mm Height- 110mm	
4	Display	Detachable Type Display provision	
5	Communication	Loop in loop out Modbus communication facility	
6	Software	Software to create SLD for monitoring all CB's	
		Report Generation	
		Parameters Analysis	
7	Technical data	Rated Voltage-230VAC or 24VDC	
		No. Of Phase-1 Phase	
		Frequency- 50Hz +-5%	
8	Operation time	Calculation of the closing coil operation time	
		Calculation of the Tripping coil operation time	
		Calculation of the Spring Charging Motor operation time	
9	Data Sampling Period	Data Sampling Time-1ms	

ORIGINAL EQUIPMENT MANUFACTURER OF BHMS SIGN & STAMP

BIDDER'S SIGN & STAMP

DATA SHEET
145 KV CURRENT TRANSFORMER

Sheet Part-1 (Primary Details)

Description	BMC Requirement	Offered by the Bidder
Make	CG Power/BHEL/ABB	
Model	Single Pole	
Type	Oil Impregnated, Hermetically sealed, Outdoor, Live Tank Type	
Comply to	IEC 61869-1 & 2 / IS 16227-1 & 2	
N S Voltage	132 kV	
H S Voltage	145 kV	
Insulation Level	275 kV / 650 kVp	
Rated Pry Current	50-100 Amp.	
S.T. Current & Duration	31.5 kA / 1 Sec.	
Rated Dynamic Current	78.75 kA (peak)	
Rated Cont. Thermal Current	120 Amp.	
Frequency	50 Hz	
Insulation Class	Class A (Oil impregnated paper)	
Tank / Housing	Aluminium	
Min. Creepage Dist.	3625 mm	
Height Up to Pry Terminal	2100 mm (Approx.)	

ORIGINAL EQUIPMENT MANUFACTURER SIGN & STAMP

BIDDER'S SIGN & STAMP

DATA SHEET
145 KV CURRENT TRANSFORMER

Sheet Part-2 (Secondary details)

Description	BMC Requirement	Offered by Bidder
CORE-I		
Ratio	400-200/1A	
Sec. Terminal	1S1-1S3 1S1-1S2	
VA	--	
Class	PS / PX	
KpV (min)	400-200V	
Iexc (max) vk/2	50-100mA	
Rct at 75^0CΩ	2-1	
CORE-II		
Ratio	100-50/1A	
Sec. Terminal	2S1-2S3 2S1-2S2	
VA	30-15	
Class	5P20	
KpV (min)	-	
Iexc (max) vk/2	-	
Rct at 75^0CΩ	-	
CORE-III		
Ratio	100-50/1A	
Sec. Terminal	3S1-3S3 3S1-3S2	
VA	--	
Class	PS / PX	
KpV (min)	500-250V	
Iexc (max) vk/2	50-100mA	
Rct at 75^0CΩ	4-2	
CORE-IV		
Ratio	100-50/5A	
Sec. Terminal	4S1-4S3 4S1-4S2	
VA	30-15	
Class	1	
KpV (min)	-	
Iexc (max) vk/2	-	
Rct at 75^0CΩ	-	

ORIGINAL EQUIPMENT MANUFACTURER
SIGN & STAMP

BIDDER'S SIGN & STAMP

DATA SHEET

145 KV ISOLATOR/GOD

Sr. No.	Description	BMC Requirement	Offered by Bidder
1	Make	ABB / C.G. Power / SIEMENS / HITACHI / BHEL	
2	Voltage	145 kV	
3	Insulation Level	650kVp	
4	Normal Current	1600 A	
5	Short time withstand current	40 kA-3 S	
6	Frequency	50 Hz	
7	Weight	As per manufacturer standard	
8	Type of Contact	Finger & Fist type (Springless)	
9	Type& Service	Horizontal Center Break, Outdoor	
10	Type of Operation	Mechanically gang operation	
11	Number of Phases	Three	
12	Operating Motor	3 Phase 440V AC	
13	Control Supply	110 Volt DC	
14	Standard to which equipment	IEC 62271-102, IEC62271-1	

ORIGINAL EQUIPMENT MANUFACTURER SIGN & STAMP

BIDDER'S SIGN & STAMP

PROFORMAS:

PROFORMA- I

The list of similar works as stated in para 'A' of Post qualification during last **Seven** years–

PROFORMA- I				
Sr. No.	Name of the Project	Name of the employer	Stipulated date of completion	Actual date of completion
1	2	3	4	5

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 of ~~Civil Engineering Construction~~ Works 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 5 years
1				
2				
3				
4				
5				
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
1	2	3	4	5	6	7

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				
Sr. No.	Post	Name	Qualification	Work Experience
		(Prime Candidate/ Alternate)		No. of Years
1	Project Manager			
2	Quality Control Engineer			
3	Site Engineer			
4	Site Supervisor			

NOTE: Scanned Attested copies of qualification certificates and details of work experience shall be submitted /uploaded.

MACHINERY: (for special work only)

PROFORMA- V/A		
Sr. No.	Equipment	Number
1	2	3

PROFORMA- V/B		
Sr. No.	Equipment	Number
1	2	3

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
1	2	3	4	5	6	7

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 & Addresses of employee	Value of Contract in Rs.	Time Period	Date on which decision is expected
1	2	3	4	5	6

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)	Employer	Cause of Dispute	Amount involved	Remarks showing Present Status.
1	2	3	4	5

Undertaking for best price

(On Rs. 500/- stamp paper duly notarized by notary with red seal and registration number)

Tender / Bid No. 2026_MCGM_1347792_1

To,

The Municipal Commissioner
For the Brihanmumbai Municipal Corporation

Sir,

"I / We ……(Full Name in capital letters starting with surname), the Proprietor / Managing Partner / Managing Director / Holder of the Business / Manufacturer / Authorized Dealer, for the establishment / firm / registered company , named herein below , do hereby , 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 any establishment / firm or any other person , who have filled in the tender for the aforesaid work."

"I / We do hereby further undertake that, we have offered the best prices for the subject supply / work as per the present market rates. **Further, we do here by undertake and commit that we have not offered / supplied the subject product / similar product / system or sub system in the past one year in the Maharashtra State for quantity variation up to - 50% or + 10 % at a price lower than that offered in the present bid to any other outside agencies including Govt. / Semi Govt. agencies and within the BMC also.** Further, we have filled in the accompanying tender with full knowledge of the above 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 behalf in this tender.

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."

However, in case of price difference, if it is a result of differential tax structures, different dollar value of Rupee, differential logistic of transport etc. Considering this aspect, before

invoking the penalty, black-listing, I/We will be given a reasonable opportunity of being heard by representing our case as to why such price variation / differential has been arisen.

In case if the explanation submitted by me / us is unsatisfactory then action including forfeiture of despite and black-listing may be taken against me/us.

Tenderer's full Signature with full name & address with rubber stamp

Irrevocable Undertaking

(On stamp paper of Rs. 500/- duly notarized by notary with red seal and registration number)

I Shri/Smt ..... aged, ...years Indian

Inhabitant. Proprietor/Partner/Director of M/s. ..... resident at ..... do hereby give Irrevocable undertaking as under;

1) I say & undertake that as specified in section 171 of CGST Act, 2017, any reduction in rate of tax on supply of goods or services or the benefit of input tax credit shall be mandatorily passed on B M C by way of commensurate reduction in prices.

2) I further say and undertake that I understand that in case the same is not passed on and is discovered at any later stage, B M C shall be at liberty to initiate legal action against me for its recovery including, but not limited to, an appeal to the Screening Committee of the GST Counsel.

3) I say that above said irrevocable undertaking is binding upon me/my partners/company/other Directors of the company and also upon my/our legal heirs, assignee, Executor, administrator etc.

4) If I fail to compliance with the provisions of the GST Act, I shall be liable for penalty/punishment or both as per the provisions of GST Act.

Whatever has been stated here in above is true & correct to my/our own knowledge & belief.

Solemnly affirmed at DEPONENT

This day of BEFORE ME

Interpreted Explained and Identified by me.

PROFORMA LETTER

ORIGINAL EQUIPMENT MANUFACTURER AUTHORIZATION

(To be submitted with Technical Packet)

To,

The Commissioner,

Brihanmumbai Municipal Corporation,

MUMBAI-400 001.

Subject: E-Tender for SITC of spare 10 MVA 100/3.6 kV Transformer with complete bay & allied work at 100 KV Substation, Pise.

E-Tender No.: **2026_MCGM_1347792_1** Due on: _____

Dear Sir,

We, _____ (Name of the manufacturing concern) are an established manufacturer of _____having factory at _____ (factory address) do hereby authorize

M/s. _____

(Name and address of the dealer/ agent / representative) to represent us to tender and conclude the contract for the above goods manufactured by us with you against invitation of e-tender No. _____ due on _____.

We hereby assure quantity and quality as per the contract for the goods offered. We assure that the transformer offered by us is adhering to the specifications of existing 10 MVA Power Transformer installed at Pise site. We also assure uninterrupted supply of supply of spares, material, service, etc. included in Bill of Quantities in the tender for till the completion of entire contract period (Inclusive of defect liability period of 3 years).

Yours faithfully,

For and on behalf of M/s._____

(Name of manufacturer)

Signature (_____)

(Name & Designation of authorized signatory)

Place: Date:

Note: This letter of authority shall be in original on the letterhead of the manufacturing concern and should be signed by a person competent and having the power of attorney to bind the manufacturers.

PROFORMA LETTER

TO BE SUBMITTED BY BIDDER WHO ARE MANUFACTURERS

(To be submitted with Technical Packet)

To,

The Commissioner,

Brihanmumbai Municipal Corporation,

MUMBAI-400 001.

Subject: SITC of spare 10 MVA 100/3.6 kV Transformer with complete bay & allied work at 100 KV Substation, Pise.

e-Tender No. **2026_MCGM_1347792_1**

Dear Sir,

We, _____(Name of the manufacturing concern) are an established manufacturerof_____(description of product) having factory_____ at (factory address) _____

We hereby assure quantity and quality as per the contract for the goods offered for supply against this invitation for tender and undertake to abide by the said clause. We also assure uninterrupted supply of spares, material, service, etc. included in Bill of Quantities in the tender for till the completion of entire contract period (Inclusive of defect liability period of 3 years).

For and on behalf of M/s._____

(Name of manufacturer)

Note:- This Proforma is meant for manufacturers who are participating in the tendering themselves. This letter shall be submitted with the tender in original on the letterhead of the manufacturing concern and signed by a person competent to sign the same.

BRIHANMUMBAI MUNICIPAL CORPORATION

Tender No.: **2026_MCGM_1347792_1**

Subject: SITC of spare 10 MVA 100/3.6 kV Transformer with complete bay & allied work at 100 KV Substation, Pise.

The Tenderer shall state briefly any deviation from the specifications, contained in his main offer.

DEVIATION SCHEDULE

Sr. No.	Item	Deviation	Remarks

Signature of authorized person of concern/company

ANNEXURE

GRIEVANCE REDRESSAL MECHANISM

(To be submitted with Technical Packet-B)

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 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 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 off 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 speçified in pre-qualification document, bidder registration document or bid documents, as the case may be.

Where BMC fails to dispose off 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 Redressal Committee shall be accompanied by fee of Rs.25,000/- and fee shall be paid in the form of D.D. in favour of BMC.

1st Appeal by the bidder against the decision of C.E./ HOD/ Dean can be made to 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 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 decision as per second appeal made by the bidder.

This Grievance Redressal Committee (GRC) will be operated through DMC (CPD) office where appeals of aggrieved bidder will be received with 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 registrar appointed by BMC.

No application shall be maintainable before the redressal Committee in regard of 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 a 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-acceptance shall 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.

BRIHANMUMBAI MUNICIPAL CORPORATION

(HYDRAULIC ENGINEER'S DEPARTMENT)

UNDERTAKING FOR SITE VISIT

(To be submitted on the letterhead of TENDERER while uploading tender in packet A / B)

Date:

To,
Executive Engineer
(Mech. & Elect.) Pise

Bid No.: **2026_MCGM_1347792_1**

Name of Work: SITC of spare 10 MVA 100/3.6 kV Transformer with complete bay & allied work at 100 KV Substation, Pise.

Subject : **Site Visit Undertaking**

Dear Sir/Madam,

We M/s. _____(name of tenderer) hereby undertake that, before submitting our bid for the abovementioned work and bid no, we have completed the site visits at BMC site locations: _____ (mention BMC site address) to understand the scope of work on_____(mention site visit date).

We are now fully aware of the site conditions and has taken into consideration all factors as an experienced contractors to successfully carry out the work as per the tender requirements of BMC for above mentioned work and bid no, before submitting our Bid for the abovementioned work.

Thanking you.

Yours faithfully

Name, Stamp & Signature of Tenderer

NOTE:

As the installation is a live 100 kV Electrical substation the bidder has to take prior permission of Executive Engineer (M&E) Pise. For permission, please email to eemnepippc.he@mcgm.gov.in at least one working day in advance.

BRIHANMUMBAI MUNICIPAL CORPORATION

(H.E.'s Department-O.C.Division)

ENVIRONMENTAL MANAGEMENT PLAN

Sr. No	Head		Information to be filled by the Project Proponent
1	**Project Overview**		
	1.1	Project Details	
	1.2	Project Proponent information	
2	**Project Details**		
	2.1	Construction Activities	
	2.2	Material Management	
	2.3	Existing site Features	
3	**Statutory Requirement**		
	3.1	Legal Compliances	
	3.2	Applicable Permits	
4	**Organization Structure Arrangement**		
	4.1	Project Team & Roles	
5	**Environmental Management Plan (EMP)**		
6	6.1	Pre-construction Phase	
	6.2	Construction Phase	
	6.3	Operation Phase	
7	**Environmental Monitoring & Reporting**		
8	**Conclusion & Commitment**		

Prepared & Checked by
(Sign, Name and Designation)
(To be signed by
Site Incharge/Manager of Contractor)

Authorised by
(Sign, Name and Designation)
(To be signed by
Project Proponent/Contractor)

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