

Bid Invitation No- 7200043470



e-Tender Document

**Rehabilitation of 600 mm to 900 mm diameter sewer lines by
trenchless technology.**

Website: <https://portal.mcgm.gov.in>

Office of the:-

Deputy Chief Engineer (S.O.) Planning & Construction,
1st Floor, S.O. Administrative Building,
149, Senapati Bapat Marg,
Dadar (West), Mumbai- 400 028.

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SECTION 1
E-TENDER NOTICE

BRIHANMUMBAI MUNICIPAL CORPORATION

Chief Engineer (Sewerage Operations)

Bid No. - 7200043470

E-TENDER NOTICE

Subject: Rehabilitation of 600 mm to 900 mm diameter sewer lines by trenchless technology.

The Brihanmumbai Municipal Corporation (BMC) invites e-tender on percentage rate basis to appoint contractor for the afore mentioned 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 **or Joint Venture of not more than 02 firms**, will be allowed subject to condition that, the contractors who are not registered with Brihanmumbai Municipal Corporation (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.

Bidding Process will comprise of THREE stages.

The application form can be downloaded from BMC's portal (<http://portal.mcgm.gov.in>) on payment of Rs. 1000.00 + 5% GST. The applicants not registered with BMC are mandated to get registered (Vendor Registration) with Brihanmumbai Municipal Corporation (BMC) for e-tendering process & obtain login credentials to participate in the online bidding process.

- 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), 4th floor, Municipal Headquarter.
- 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 anyone 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 and location of work	Contract period	Estimated Cost of Project
Rehabilitation of 600 mm to 900 mm diameter sewer lines by trenchless technology.	24 Months Excluding monsoon	Rs. 64,09,79,425 /-

In terms of the 3 stage system of e-tendering, a Bidder will be required to deposit, along with its Bid, an Earnest Money Deposit of Rs. 64,09,800.00/- (Rupees Sixty Four Lakhs Nine Thousand Eight Hundred only) (the "EMD"), refundable in accordance to the relevant clause of bid document, from the Bid Due Date, except in the case of the selected Bidder whose Bid Security/ EMD shall be retained. The Bidders will have to provide Earnest Money Deposit through the payment gateways while submitting the bids. The Bid shall be summarily rejected if it is not accompanied by the Earnest Money Deposit. The e-tender is available on BMC portal (<http://portal.mcgm.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 Deputy Chief Engineer (Sewerage Operations) Planning & Construction. The Packet C shall be opened if bids submission in Packet A& B satisfies/ includes all the requirements and the 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.mcgm.gov.in>)

The Applicants interested for the above referred works may contact the Deputy Chief Engineer (Sewerage Operations) Planning & Construction at the following address on any working day during office hours.

Office of-

Deputy Chief Engineer (Sewerage Operations) Planning & Construction,
First Floor, Sewerage Operation (S.O.) Administrative Building,
249, Senapati Bapat Marg, Dadar West,
Mumbai – 400 028.

The applicants who wish to visit the site/s under reference located at City and Eastern Suburb area, a part of Mumbai and can collect the information of the present status from the department who have invited the bids.

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

Sd/-
(Surendra K. Tikhe)
Deputy Chief Engineer
(Sewerage Operations) Planning & Construction

HEADER DATA

Bid No. 7200043470

Name of Organization	Brihanmumbai Municipal Corporation
Subject	Rehabilitation of 600 mm to 900 mm diameter sewer lines by trenchless technology.
Estimated Cost	Rs. 64,09,79,425 /-
Cost of Tender	Rs. 10,400.00 + 18% GST.
Bid Security Deposit/ EMD	Rs. 64,09,800.00/-
Date of issue and sale of tender	10/01/2023 from 11:00 Hrs
Date of Pre-Bid Meeting	17/01/2023 at 14:30 Hrs in Conference Room of Ch.E.(S.O.), 2nd Floor Conference Hall, Engineering Hub Building, Dr. E'Mozes Marg, Worli, Mumbai – 400 018.
Last date & time for sale of tender	31/01/2023 up to 12:00 Hrs
Last date & time for Receipt of Bid Security Deposit / EMD	31/01/2023 up to 16:00 Hrs
Submission of Packet A, B & Packet C (Online)	31/01/2023 up to 16:00 Hrs
Opening of Packet A	02/02/2023 after 16:01 Hrs.
Opening of Packet B	02/02/2023 after 16:02 Hrs.
Opening of Packet C	07/02/2023 after 15:00 Hrs.
Address for communication	Deputy Chief Engineer (Sewerage Operations) Planning & Construction, First Floor, Sewerage Operation (S.O.) Administrative Building, 249, Senapati Bapat Marg, Dadar West, Mumbai – 400 028.
Venue for opening of bid	On line in Deputy Chief Engineer (Sewerage Operations) Planning & Construction's office.

This tender document is not transferable.

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

Sd/-
(Surendra K. Tikhe)
Deputy Chief Engineer
(Sewerage Operations) Planning & Construction

SECTION 2

ELIGIBILITY CRITERIA

A) Eligibility Criteria

1.1 Technical Capacity :

- (i) The bidder shall be the manufacturer of structural liner he intends to offer for the subject bid or an authorised representative of the manufacturer of structural liner he intends to offer for the subject bid.

If the bidder is authorised representative of the manufacturer of Structural Liner, he shall submit the letter of authorisation from the manufacturer as per Proforma given in tender document (Annexure–G) and also shall submit the Memorandum of Understanding (MOU) between the manufacturer and the authorised representative as per Proforma – VIII given in tender document.

- (ii) The tenderer(s) and / or Manufacturer in their own name should have satisfactorily executed the work of similar nature in BMC /Semi Govt. /Govt. & Public Sector Organizations/Foreign Public Utility Boards/Organizations during last seven (7) years ending last day of month previous to the one in which bids are invited as a prime Contractor (or as a nominated sub-Contractor, where the subcontract had involved similar nature of work as described in the scope of works in this bid document, provided further that all other qualification criteria are satisfied)

- (a) Three similar completed works of value not less than the value equal to Rs. **12,81,95,900/-**.

Or

- (b) Two similar completed works of value not less than the value equal to Rs. **16,02,44,900/-**.

Or

- (c) One similar completed works of value not less than the value equal to Rs. **25,63,91,800 /-**.

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.

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

1.2 Financial Capacity:

Achieved an average annual financial turnover as certified by 'Chartered Accountant' equal to **Rs. 19,22,93,800/-** in last three (3) financial years immediately preceding

the Financial Year in which bids are invited.

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

1.3 Similar Experience :

Similar work shall mean, the completed or ongoing works of **"Rehabilitation of sewer line(s)/ storm water pipe line(s)/ water pipe line(s) by the trenchless technology which the bidder intends to offer for the captioned subject bid"**.

B) 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 or financial failures etc.

SECTION 3

DISCLAIMER

DISCLAIMER

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

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

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

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

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

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

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

SECTION 4

INTRODUCTION

INTRODUCTION

1. Background:

The Brihanmumbai Municipal Corporation covers an area of 437.71 sq. 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 Greater Mumbai.

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

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 delivered to the public by different departments like Water Supply Projects, Sewerage Projects, Hydraulics, Storm Water Drain, Roads and bridges and Building Construction etc.

SECTION 5

**E-TENDERING ONLINE
SUBMISSION PROCESS**

E-TENDERING ONLINE SUBMISSION PROCESS

The terminology of e-Tendering is solely depending upon policies in existence, guidelines and methodology adopted since decades. The SRM is only change in process of accepting and evaluation of tenders in addition to manual. The SAP module to be used in this E-tendering is known as Supplier Relationship Module (SRM).SRM is designed and introduced by ABM Knowledge ware Ltd. who will assist BMC in throughout the tendering process for successful implementation.

NOTE: This tendering process is covered under Information Technology ACT & Cyber Laws as applicable

- (1) In e-tendering process some of the terms and its definitions are to be read as under wherever it reflects in online tendering process.

Start Date read as "Sale Date"

End Date read as "Submission Date"

Supplier read as "Contractor/bidder"

Vendor read as "Contractor/bidder"

Vendor Quotation read as "Contractors Bid/Offer"

Purchaser read as "Department/BMC"

- I. Before entering in to online tendering process, the contractors should complete the registration process so as to get User ID for E-tendering links. For this, the contractors can access through Supplier registration via BMC Portal.

There are two methods for this registration :(II and III)

- II. Transfer from R3 (registered contractors with BMC) to SRM
- a. Contractors already registered with BMC will approach to Vendor Transfer Cell.
 - b. Submit his details (such as name, vendor code, address, registered Email ID, pan card etc.) to Vendor Transfer Cell.
 - c. BMC authority for Vendor Transfer, transfers the Vendor to SRM application from R3 system to SRM system.
 - d. Transferred Vendor receives User ID creation link on his supplied mail Id.
 - e. Vendor creates his User ID and Password for e-tendering applications by accessing link sent to his mail ID.

- III. Online Self Registration (Temporary registration for applicant not registered with BMC)
- a. Vendor fills up Self Registration form via accessing BMC portal.
 - b. Vendor Transfer Cell (same as mentioned above) accesses Supplier Registration system and accepts the Vendor request.
 - c. Accepted Vendor receives User ID creation email with Link on his supplied mail Id.
 - d. Vendor creates his User ID and Password for e-tendering application.
- IV. CONTRACTORS BIDDING: Applicant will Quote and Upload Tender Documents
1. Access e-tender link of SRM Portal
 2. Log in with User ID and Password
 3. Selects desired Bid Invitation (he wants to bid)
 4. To download tender documents contractors will have to pay online Tender fee. The same can be done by accessing Pay Tender Fees option. By this one will be able to pay Tender fee through Payment Gateway-If transaction successful, Contractors can register his interest to participate. Without Registration one cannot quote for the Bid/Tender.
 5. Applicant will download Tender Documents from purchaser tab by accessing Purchaser document folder through collaboration 'C' folder link.
 6. Applicant will upload Packet A related and Packet B related Documents in Packet A and Packet B folder respectively by accessing these folders through "My Notes" Tab and collaboration folder link.
 7. All the documents uploaded have to be digitally signed and saved. Contractors can procure their digital signature from any certified CA's in India.
 8. Bid security deposit/EMD and ASD, if applicable, should be paid online as mentioned in tender.
 9. For commercial details (in Packet C) contractors will fill data in Item Data tab in Service Line Item via details and quote his "Percentage Variation" (i.e.% quoted) figure.(If entered '0' it will be treated as at par. By default the value is zero only.)
 10. Applicants to check the bid, digitally sign & save and submit his Bid Invitation.

11. Applicants can also save his uploaded documents/commercial information without submitting the BID for future editing through 'HOLD' option.
12. Please note that "Hold" action do not submit the Bid.
13. Applicants will receive confirmation once the Bid is submitted.
14. Bid creator (BMC) starts Bid Opening for Packet A after reaching End Date and Time and Bid Evaluation process starts.

As per Three Packet system, the document for Packet A & B are to be uploaded by the tenderer in 'Vendor's document' online in Packet A & B. Before purchasing/ downloading the tender copy, tenderer may refer to post- Qualification criteria mentioned in e-Tender Notice.

The tenderer shall pay the EMD/Bid Security through payment gateways before submission of Bid and shall upload the screenshot of receipt of payment in Packet 'A' instead of paying the EMD at any of the CFC centers in BMC Ward Offices.

The e-tender is available on BMC portal, <http://portal.mcgm.gov.in>, as mentioned in the Header Data of the tender. The tenders duly filled in should be uploaded and submitted online on or before the end date of submission. The Packet 'A', Packet 'B' & Packet 'C' of the tenderer will be opened as per the time-table shown in the Header Data in the office of Deputy Chief Engineer (Sewerage Operations) planning & Construction).The Municipal Commissioner reserves the right to reject all or any of the e-Tender(s) without assigning any reason at any stage. The dates and time for submission and opening the tenders are as shown in the Header Data. If there are any changes in the dates the same will be displayed on the BMC Portal (<http://portal.mcgm.gov.in>).

SECTION 6

INSTRUCTIONS TO APPLICANTS

INSTRUCTIONS TO APPLICANTS

➤ **Scope of Application**

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

A. Equipment Capabilities as required for this work

a) 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.

b) New and Original Works : (Not Applicable)

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.

B. Technical Personnel

Number of Technical Staff required for successful execution of the work shall be provided by the successful bidder. The details of required experienced technical personnel and penalisation in case of failure in providing these experienced technical personnel are as given but not limited to the followings.

Requirement of Technical Staff -

Requirement of Technical Staff		Minimum Experience (years)	Designation
Qualification	Number		
i) Graduate Engineer	1	12	Project Manager
ii) Graduate Engineer OR Diploma Engineer	1 1	5 10	Project/Site Engineer
iii) Graduate Engineer	1	8	Quality Engineer
iv) Diploma Engineer	1	8	Surveyor
v) Graduate Engineer	1	6	Project Planning / Billing Engineer
vi) Diploma / Degree in Safety Practices by a recognized university	3 and / or 1 for each site under execution	2	Safety officer

Notes- Rate of recovery in case of non-compliance of the clause be stipulated at following rates.

Sr. No.	Qualification	Experience (years)	Rate of Recovery
1	Project Manager with degree	12	Rs. 60000/-p.m.
2	Project/Site Engineer	5 or 10	Rs. 25000/-p.m.
3	Quality Engineer	8	Rs. 25000/-p.m.
4	Surveyor	8	Rs. 15000/-p.m.
5	Project Planning / Billing Engineer	6	Rs. 20000/- p.m.
6	Safety Officer	2	Rs. 20000/- p.m.

C. TIME PERIOD OF THE PROJECT:

Entire project should be completed and delivered within **24 Months** of time from the date of award of contract that **excludes 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 General Conditions of Contract.

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.

D. 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

E. 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 / Contract already accepted shall be considered as cancelled and legal steps be taken against the contractor for recovery of the amounts.

F. 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.

G. Action when whole of security deposit is forfeited:

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

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

In case the contract shall be rescinded under Clause (a) above, the contractor shall not be entitled to recover or be paid any sum for any work therefore actually performed by him under this contract unless and until the Executive Engineer shall have certified in writing the performance of such work and the amount payable to him in respect thereof and he shall only be entitled to be paid the amount so certified. In the event of either of the courses referred to in Clause (b) or (c) being adopted and the cost of the work executed departmentally or through a new contractor and other allied expenses exceeding the value of such work credited to the 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.

H. 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** (in Hindi / Marathi / English) of Minimum Solvency amount of Rs. 8 lacs as governed by Registration Rules in force for respective Class of Contractor for M&E works from the scheduled / nationalized Bank in the name of firm / company granted not prior to twelve months of due date of tender.
- c) A document in support of Registration under 'Goods & Service Tax Act, 2017. Those not registered shall submit an undertaking to the effect that if they are successful tenderer, they shall submit GST Registration Certificate 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) The registered power of attorney in the name of person submitting the bid duly registered with Chief Accountant (Treasury) of BMC.

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 curable 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.
- Any submission in foreign language other than English shall be translated into English and the translated version of these documents shall be attested from the Consulate / Embassy of that country before submission of document and translation of Indian language shall be certified by Gazetted Officers.

PACKET - B

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

- a) The list of similar type of works as stated in para 'A' of Post qualification successfully completed during the last seven years in prescribed proforma, in the role of prime contractor. Information furnished in the prescribed Proforma (Proforma – I & Proforma III) shall be supported by the certificate duly self-attested.
- 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:

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.

ii) New and Original Works: (Not Applicable)

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

sub-mitted along with the Bid in Packet B. However, this condition in no way shall dilute the respective condition in Registration Rules of BMC.

- e) Details of works in hand and for which bids already submitted (Proforma VI-A & VI-B) (original), along with copies of work orders & attested copies of percentage of works completed or part thereof.
- f) Information on Litigation History in prescribed proforma (Proforma-VII).
- g) Memorandum of Understanding between Manufacturer & Authorised Representative in prescribed proforma (Proforma-VIII).
- h) Statement showing assessed available Bid Capacity.
- i) The undertaking of Rs. 500/- stamp paper as per the proforma annexed in 'Annexure B, C, E & L'.

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

- j) Status of Bidder in Annexure 'F', Manufacturer's Authorization Certificate in Annexure 'G', Joint Venture Forms as per Annexure 'H'.
- k) The tenderer(s) 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.
- l) Proforma IV- Personnel Details and Proforma V/A and V/B – Machinery

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 curable 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.
- Any submission in foreign language other than English shall be translated into English and the translated version of these documents shall be attested from the Consulate / Embassy of that country before submission of document and translation of Indian language shall be certified by Gazetted Officers.

PACKET – C

Online tender filled in either plus or minus (above or below) or at par. (There is no separate provision to quote % in physical form, this is a part in Header Data of online Tendering). For Packet 'C' tenderer(s) will fill data in 'Item Data Tab' in Service Line Item via Details and quote his percentage variation figures. **(If entered '0' it will be treated as 'at par'**. By default the value is zero only).

Note: In case of rebate/premium of 15% and above as quoted by the tenderer, the rate analysis of major items shall be submitted by L1 and L2 bidder after demand notification by e-mail to bidders by concerned Dy.Ch.Eng. The format for rate analysis is annexed at Annexure D.

BID SECURITY OR EMD

- The Bidder shall furnish, as part of the Bid, Bid Security/EMD, in the amount specified in the Bid Data Sheet. This bid security shall be in favour of the authority mentioned in the Bid Data Sheet and shall be valid till the validity of the bid.
- The tenderers shall pay the EMD online instead paying the EMD at any of the CFC centres in BMC Ward Offices.
- Any bid not accompanied by an acceptable Bid Security and not secured as indicated in sub-clause mentioned above, shall be rejected by the Employer as non-responsive.
- The Bid Security of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required Security Deposits.
- The Bid Security/ EMD and ASD of L-2 and higher bidders (L-3, L-4, etc.) shall be refunded immediately after opening of financial bid.
- In case, the successful bidder becomes non responsive or successful bidder withdraws the bid or is unwilling to extend the bid validity period, in such circumstances, if L-2 bidder is agreeable to extend the bid validity period and ready to deposit the requisite amount of bid security /EMD and ASD to the department within the stipulated time period i.e. 15 days, the department will process further as per normal procedure.
- The Bid Security may be forfeited:
 - a) if the Bidder withdraws the Bid after bid opening (opening of technical qualification part of the bid during the period of Bid validity;
 - b) in the case of a successful Bidder, if the Bidder fails within the specified time limit to:
 - i. sign the Agreement; and/or
 - ii. Furnish the required Security Deposits.

Note:

1. The cases wherein if the shortfalls are not complied by a contractor, will be informed to Registration and Monitoring Cell. Such non-submission of documents will be considered as 'Intentional Avoidance' and if three or more cases in 12 months are reported, shall be viewed seriously and disciplinary action against the defaulters

such as banning/de-registration, etc. shall be taken by the registration cell with due approval of the concerned AMC.

2. No rejections and forfeiture shall be done in case of curable defects. For non-curable defects the 10% of EMD shall be forfeited and bid will be liable for rejection.

Note:

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

a) Non-submission of following documents,

- i. Valid Registration Certificate
- ii. Valid Bank Solvency
- iii. GST Registration Certificate
- 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.

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) Wrong calculation of Bid Capacity,
- d) 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 request will not be required or permitted to modify his bid, but will be required to extend the validity of his bid security for a period of the extension.

DEFECT LIABILITY PERIOD

- The Contractor is expected to carry out the construction work in Workmen like manner so as to meet the requirement and specification for the project. It is expected that the Workmanship and materials will be reasonably fit for the purpose for which they are required.
- Defects or defective work is where standard and quality of workmanship and materials as specified in the contract is deficient. Defect is defined as a failure of the completed project to satisfy the express or implied quality or quantity obligations of the construction contract. Defective construction works are as the works which fail short of complying with the express descriptions or requirements of the contract, especially any drawings or specifications with any implied terms and conditions as to its quality, workmanship, durability, aesthetic, performance or design. Defects in construction projects are attributable to various reasons.
- Some of the defects are structural defects 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 Defect Liability Period (DLP) for the work is 03 Years.**

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

SECURITY DEPOSIT AND PERFORMANCE GUARANTEE

A. Security Deposit

The security deposit shall mean and comprise of

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

I) **Contract Deposit** - The successful tenderer, hereafter referred to as the contractor shall pay an amount equal to **two (2)** percent of the contract sum as a Contract Deposit within thirty days from the date of issue of letter of acceptance.

II) **Retention Money** - The contractor shall pay the retention money an amount equal to **five (5)** percent of the Contract Sum which will be recovered from the contractors every bill i.e. interim / running / final bill. The clause of retention money will not be applicable M. & E. Department.

B. Additional Security Deposit

1. If the lowest bidder quotes rebate less than 12%, then the applicable additional security deposit (ASD) at the rate of 1% for each percentage quoted below 12% will not require to be paid online while submission of tender online.
2. After sanction/approval of competent authority to the contract cost, the lowest bidder shall deposit ASD in the Municipal Citizen Facility Centres in the form of Demand Draft as mentioned in Letter of Acceptance (LOA) within 15 working days as per prevailing practice and the receipt of the same shall be submitted to Head of the Department.
3. If the first lowest bidder will not paid ASD within 15 working days after issue of LOA, then the EMD paid by the concerned company will be forfeited and the company will be debarred for two years, similarly if the Director/Partner of the company is also working in other company as a Director/Partner, then said company will also be debarred for two years.

The ASD shall be paid as per the circular u/no. CA(Finance)/42 dated. 09.02.2021 annexed in tender document.

C. Performance Guarantee

The successful tenderer, hereafter referred to as the contractor shall pay in the form of "Performance Guarantee" at different rates for different slabs as stated below:

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

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

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

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

Performance Guarantee is 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

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

The balance Retention Money 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) provided that the Engineer is satisfied that there is no demand outstanding against the Contractor. In the event of different Defects Liability Periods have been specified or become applicable to different sections or parts of the Permanent Works, the said moneys will be released within 30 days on expiration of the latest of such Defects Liability Periods.

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

III. Refund of Additional Security Deposit

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

IV. Refund of Performance Guarantee

The Deposit on account of performance guarantee shall be released within 30 days of completion of Defects Liability Certificate subject finalization of final bill whichever is later and no recoveries are pending against the said work, provided that the Engineer is satisfied that there is no demand outstanding against the Contractor.

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

- a) Time of Refund for works having 5 years DLP

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

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

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

***Note:**

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

E. Legal + Stationary Charges:

Successful tenderer shall pay the Legal Charges + Stationary charges as per Circular no. 26006 dated 22.07.2022 as per Annexure-N or latest circular in this regards plus 18 % GST applicable.

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

F. Stamp Duty: (As per latest applicable circular)

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

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

(a)	Where the amount or value set forth in such contract does not exceed rupees ten lakh.	Five Hundred rupees stamp duty
(b)	Where it exceeds rupees ten lakhs	Five hundred rupees plus 0.1% of the amount above Rs. 10,00,000/- subject to the maximum of rupees twenty five lakh stamp duty.
(c)	Bank guarantee: As per article 54 read with 40(b) of stamp duty act, stamp duty of 0.5% will be applicable to the all bank guarantee submitted also which are required to be renewed after expiry of time period.	

- ii. The successful bidder shall enter into a contract agreement with BMC within 30 days from the date of issue of Work Order and the same should be adjudicated for payment of Stamp Duty by the successful bidder.
- iii. Further shortfall if any, in amount of stamp duty paid as against prescribed amount for the documents executed in Mumbai City & Mumbai Suburban District be recovered from the concerned work contractors and to deposit

the deficit or unpaid Stamp Duty and penalty by two separate Demand Draft or Pay Order in favour of “Superintendent of Stamp, Mumbai” within 15 days from intimation thereof.

- iv. All legal charges and incidental expenses in this respect shall be borne and paid by the successful tenderer.

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 <https://portal.mcgm.gov.in/irj/portal/anonymous/qltenders> for “The Manual of Bid-Submission for Percentage 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 eeencme.so@mcgm.gov.in. The subject shall clearly bear the following identification/ title: "Queries/ Request for Additional Information: TENDER for (Tender Subject)". 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-Documents number for re-quoting** and such development needs to be done by IT department in BMC's SRM system. **Till such development is made; 'Sealed Bids' shall be called from the bidders quoting the same percentage 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 Chief Engineer.

The bidder shall need to submit the additional ASD if applicable within 15 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.

4. GST and other state levies/cess which are not subsumed under GST will be applicable. The tenderer shall quote inclusive of all taxes applicable at the time of bid submission. It is clearly understood that BMC will not bear any additional liability towards payment of any Taxes & Duties.

Wherever the services to be provided by the Tenderers, falls under Reverse Charge Mechanism, the Price quoted shall be exclusive of GST, but inclusive of

Taxes/Duties/Cess other than GST, if any.

Rates accepted by BMC shall hold good till completion of work shall be admissible on account of fluctuations in market rates; increase in taxes/any other levies / tolls etc. except that payment/recovery for overall market situation shall be made as per Price variation **and if there is any subsequent change (after submission of bid) in rate of GST applicable on the work/services to be executed as per tender, i.e. any increase will be reimbursed by BMC whereas any reduction in the rate of GST shall be passed on to BMC as per the provisions of the GST Act.**

5. Contract Labour (Regulation and Abolition) Act, 1970: (As per Circular CLO/4 dated 03.06.2004)

The provisions of this act are applicable to the establishment or contractor of principle employer if they employ 20 or more contract labour. The principal employer is required to take Certificate of Registration and the Contractor is required to take a License from the designated Officer as per the act. The Act provides for certain welfare measures to be provided by law to contract labours by the contractor of Principal Employers.
6. The bidders shall take cognizance of circular u/no. Dy.Ch.E./CPD/2025 dated. 01.09.2021. As per the circular the clause of 'Internal Grievance Redressal Mechanism' will be applicable for subject tender.
7. The bidder should be well acquainted with the working conditions in terms of population density, traffic, statutory requirements and permission required to work in Mumbai.
8. Considering the importance of the work, the bidder should be well equipped with office facility in Mumbai Metropolitan Region to effectively deliver the work assigned and shall produce documentary evidence regarding the office set up in Mumbai Metropolitan Region for last 03 years in Packet 'B' failing which the offer shall be treated as non responsive. The office set up shall remain at least till completion of the work.
9. The authorised representative of the manufacturer of structural liner he intends to offer for the subject bid and/or the lead member of the JV firm shall meet at least 35% requirement of Technical Capacity as stipulated in the tender. (Provided further that all other qualification criteria are satisfied).
10. The G.C.C. of SBD document has been incorporated in the tender. In case of dispute which could not be covered with the clauses of G.C.C. in SBD, however, covered in the clauses of Standard General Condition of Contract uploaded on website of BMC, the clauses of Standard G.C.C. will govern.

SECTION 7

SCOPE OF WORK

SCOPE OF WORK

Subject : Rehabilitation of 600 mm to 900 mm diameter sewer lines by trenchless technology.

Brihanmumbai Municipal Corporation has sewer network of about 2026 kms having various sizes of man-entry and non-man entry sewer lines. In the present tender, BMC intends to undertake work of "Rehabilitation of 600mm to 900 mm diameter sewer lines by trenchless technology".

The purpose of structural rehabilitation is to increase the structural strength as well as flow carrying capacity of the Sewer to improve the hydraulic performance and to increase corrosion resistance and in turn to enhance the useful life of the sewer. The schedule of sewer lines included in the scope of work is as follows:

Sr. No.	Sewer Stretch / Location	Ward	Tentative Sewer Dia. (mm)	Tentative Sewer Length (Mtr.)	Tentative Manhole Depth (Mtr.)	
					Min.	Max.
1	Vakola Road (From Jn. Sundar Nagar Road No. 2 to Jn. Ch. Shivaji Maharaj Road)	H/E	600	1540	3.50	7.33
2	Achutrao Patwardhan Marg (A to B) (From Lokhandwala Circle to Platinum Height /Harley's Clinic)	K/W	600	560	4.90	6.80
3	Achutrao Patwardhan Marg (B - C) (Wamanrao Mahadik Road to Jn. Jaiprakash Narayan Road)	K/W	600	650	5.80	7.20
4	S. V. Road (Jn. Sahakar Road to Patel Estate Road)	K/W	600	670	3.40	4.80
5	Harmindar Singh (From Aaram Nagar Corner to Wateshwar Mandir/JP road)	K/W	600	480	6.20	7.80
6	J. P. Road -2 (A-B) (From Janseva Sahakari Bank to Junction of Ceaser Road)	K/W	600	200	4.50	6.70
7	Senapati Bapat Marg (From Upendra nagar to Dadar pumping station)	G/N	600	350	9.00	11.00
8	Chimbai Road (From Chimbai Road to Jn. Hill Road)	H/W	700	420	4.00	4.51
9	Subhash Road (Jn. Caves Road to Jn. Subhash Road)	K/E	700	180	4.20	6.10

Sr. No.	Sewer Stretch / Location	Ward	Tentative Sewer Dia. (mm)	Tentative Sewer Length (Mtr.)	Tentative Manhole Depth (Mtr.)	
					Min.	Max.
10	J. P. Road -1 (A-B) (From Wateshwar Mandir to Sat-bangala Bus stop)	K/W	700	200	4.00	6.00
11	J. P. Road -1 (B-C)(From Sat-Bangala to Versova Ppg Station Near DN Nagar Metro Station)	K/W	750	1120	5.30	8.15
12	J. P. Road -2 (B-C) (From Junction of Ceaser Road to junction Box Near Versova Pumping)	K/W	750	950	4.70	8.90
13	Pandurang.Budhkar Marg (From Jn. G. M. Bhosale Marg to Globe Mill Pumping Station)	G/S	750	200	10.50	10.80
14	K L Walawalkar Marg/Andheri Link Road (From Jn. Shaha Industrial Estate Road to Jn. Adheri Oshiwara Link Road)	K/W	800	300	6.90	8.65
15	WEH Service Road (From Jn. Hanuman Road to Jn. Santacruz Station Road)	H/E	900	1970	5.50	7.40
16	Patel Estate Road (From Jn. Hazi Zahoor Qureshi Marg to Jn. S.V. Road)	K/W	900	280	4.40	6.30
17	Momin Gujarat Co.Op Soc (From Jn. Maulana Asad Madani Road to Jn. Hazi Zahoor Qureshi Marg)	K/W	900	520	2.95	5.90
18	Besant Road (From Jn. Vile Parle Station Road to Jn. Dashrathlal Joshi Road)	K/W	900	300	5.70	7.80
19	R. A. Kidwai Road (From Jn. of Sewree Cross Road (Opp. Volkswagen showroom) to Jn. Road No. 26/New National Market)	F/S	900	820	2.80	6.90
20	Ravaji Ganatra Marg (From Opp. India Post Office to Jn. Kalpak Road)	F/N	900	290	4.63	6.90
		Total		12000		

Total length of sewer lines to be rehabilitated under this project is 12,000 mtr. Contractors are requested to refer to the Contract Drawings for tentative alignment and start and end points of the aforementioned sewer lines under the scope of work.

The rehabilitation technology offered by the bidders shall meet the deliverables mentioned in the tender. Considering fully deteriorated parent sewer condition, the

structural liner shall be designed to take combined loads comprising of hydrostatic loads, soil loads and traffic loads and to act as a standalone liner/pipe in accordance with the design procedure given in the technical specification. As such, the subject tender is invited for rehabilitation of aforementioned sewer lines by trenchless technology using standalone structural Type II lining system keeping the technology option open.

It may be noted that, the rehabilitation work of sewer lines is highly advanced and fast emerging technological field wherein newer and sophisticated rehabilitation technologies are coming up. BMC intends to carry out the sewer line rehabilitation work in a efficient and cost-effective manner. As such, among the various technological options that are available, such as MWSL, CIPP with Water/Steam curing, CIPP with UV curing etc., BMC intends to accept the option which best suits the purpose.

Due to infrastructure works undertaken/to be undertaken by various authorities like Metro Rail, MMRDA, Redevelopment of B.D.D. chawl, replacement/ augmentation of sewer lines by SP/MSDP departments of B.M.C., few sewer lines (to the tune of 25%) may be deleted from the scope of the work and the quantities in B.O.Q. may thereby be reduced accordingly, without any obligation on B.M.C. to replace reduced quantities by alternate sewer stretches.

Further, by experience it is observed that there could be variations in the length of the sewer stretch and / or the size of the sewer line. The exact lengths and size under the scope of the work shall be ascertained by the Contractor after the de-silting, CCTV inspection and measurements of the sewer lines under the scope of the work. Any variation in diameter of the sewer line observed at site will be adjusted to the nearest BOQ size and the contractor will carry out the rehabilitation as per the actual size. The payment for the same shall be made according to the nearest BOQ size rate.

In case of saving in the scope of work and/ or if required, rehabilitation work of alternate/additional sewer lines will be assigned to the contractor anywhere in BMC jurisdiction within the contract cost with the sanction of the Engineer of the contract and it will be binding on the contractor to carry out said additional work as per the quoted rates. Any claim on account of saving in the contract sum will not be entertained.

SECTION 8
BILL OF QUANTITIES

BRIHANMUMBAI MUNICIPAL CORPORATION

Subject - Rehabilitation of 600 mm to 900 mm diameter sewer lines by trenchless technology.

BILL OF QUANTITIES AND RATES

Sr. No.	Brief Description of Item	Qty	Unit	Rate	Amount
1	Preparatory works as per specifications	12,000.00	MTR	260.00	31,20,000.00
2	Temporary plugging of 600 to 900 mm dia sewer lines	20.00	NOS	18,150.00	3,63,000.00
3	Permanent plugging of 600 to 900 mm dia sewer lines	40.00	NOS	3,760.00	1,50,400.00
4	Excavation of trenches for flow diversion	120.00	MTR	4,140.00	4,96,800.00
5	Diversion of flows by pumping arrangement for 600 to 900 mm dia sewer lines	12,000.00	MTR	500.00	60,00,000.00
6	Desilting and transportation of silt for 600 to 900 mm dia sewer lines	12,000.00	MTR	680.00	81,60,000.00
7	After de-silting CCTV survey	12,000.00	MTR	655.00	78,60,000.00
8	Taking pits for accessing sewer lines	5.00	NOS	79,145.00	3,95,725.00
9	Design, Manufacture, Supply & Deliver at site structural liner of 600 mm dia sewer line	4,250.00	MTR	20,100.00	8,54,25,000.00
10	Design, Manufacture, Supply & Deliver at site structural liner of 700 mm dia sewer line	760.00	MTR	22,600.00	1,71,76,000.00
11	Design, Manufacture, Supply & Deliver at site structural liner of 750 mm dia sewer line	2,200.00	MTR	25,100.00	5,52,20,000.00
12	Design, Manufacture, Supply & Deliver at site structural liner of 800 mm dia sewer line	290.00	MTR	26,500.00	76,85,000.00
13	Design, Manufacture, Supply & Deliver at site structural liner of 900 mm dia sewer line	4,000.00	MTR	30,900.00	12,36,00,000.00

Sr. No.	Brief Description of Item	Qty	Unit	Rate	Amount
14	Installation of structural liner for 600 mm dia sewer line	4,250.00	MTR	21,500.00	9,13,75,000.00
15	Installation of structural liner for 700 mm dia sewer line	760.00	MTR	23,500.00	1,78,60,000.00
16	Installation of structural liner for 750 mm dia sewer line	2,200.00	MTR	25,800.00	5,67,60,000.00
17	Installation of structural liner for 800 mm dia sewer line	290.00	MTR	27,100.00	78,59,000.00
18	Installation of structural liner for 900 mm dia sewer line	4,000.00	MTR	31,500.00	12,60,00,000.00
19	Picking up and Diversion of body connection to the nearest manhole	75.00	MTR	16,340.00	12,25,500.00
20	Manhole repairs as per specifications	400.00	NOS	38,690.00	1,54,76,000.00
21	Construction of new manholes	5.00	NOS	1,82,400.00	9,12,000.00
22	After rehab CCTV survey	12,000.00	MTR	655.00	78,60,000.00
	Total				64,09,79,425.00

Note –

For Packet 'C', tenderer(s) will fill data in 'Item Data Tab' of online tendering in Service Line Item via Details and quote his percentage variation figures. (If entered '0' it will be treated as 'at par'. By default the value is zero only).

SECTION 9

GENERAL CONDITIONS OF CONTRACT

General Conditions of Contract

A. General

1. Definitions

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

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

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

The “Contractor” shall mean the individual or firm or company whether incorporated or not, whose tender has been accepted by the employer and the legal successor of the individual or firm or company, but not (except with the consent of the Employer) any assignee of such person.

The Bidder is a person or corporate body who has desired to submit 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 finalisation of the quantities shown in schedule of items / quantities by the item rates quoted by the tenderers for various items and summation of the extended cost of each item.
- In case of lump sum contract, the sum for which tender is accepted.
- Special discount / rebate / trade discount offered by the tenderer if any and accepted by the Corporation.
- Additions or deletions that are accepted after opening of the tenders.

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

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

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

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

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

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

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

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

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

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

Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works and works of routine maintenance.

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

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

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

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

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

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

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

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

Variation means a change to the:-

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

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

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

2. Interpretation

2.1. In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Engineer will provide instructions clarifying queries about these Conditions of Contract.

2.2. If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).

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

3. Engineer's Decisions

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

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

4. Delegation

The Engineer, with the approval of the Employer, may delegate any of his duties and responsibilities to 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 relationship between the sub-contractor and the BMC and shall not relieve the Contractor of any responsibility under the Contract.

6.4. The Engineer should satisfy himself before recommending to the Employer whether,

- a. the circumstances warrant such sub-contracting; and
- b. the sub-Contractor so proposed for the Work possesses the experience, qualifications and equipment necessary for the job proposed to be entrusted to him.

7. Other Contractors

7.1. The Contractor shall cooperate and share the Site with other Contractors, public authorities, utilities, and the Employer between the dates given in the Schedule of Other Contractors, as referred to in the Contract Data. The Contractor shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification.

7.2. The Contractor should take up the works in convenient reaches as decided by the Engineer to ensure there is least hindrance to the smooth flow and safety of traffic including movement of vehicles and equipment of other Contractors till the completion of the Works.

8. Personnel

8.1. The Contractor shall employ for the construction work and routine maintenance the key personnel including technical personnel named in the Contract Data or other personnel approved by the Engineer. The Engineer will approve any proposed replacement of technical personnel only if their relevant qualifications and abilities are substantially equal to those of the personnel stated in the Contract Data.

8.2. The Contractor's personnel shall appropriately be qualified, skilled and experienced in their respective trades or occupations. The Engineer shall have authority to remove, or cause to be removed, any person employed on the site or works, who carries out duties incompetently or negligently and persists in any conduct which is prejudicial to safety, health or the protection of the environment.

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

8.4. The Contractor shall not employ any retired 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 interrelationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property.
- The Public Liability Insurance Act, 1991, This provides for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and for matters connected herewith or incidental thereto. Hazardous substance means any substance or preparation

which is defined as hazardous substance under the Environment (Protection) Act 1986, and exceeding such quantity as may be specified by notification by the Central Government.

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

16.1. The Contractor may commence execution of the Works on the Start Date and shall carry out the Works and Routine Maintenance, if specified in the tender, in accordance with the Programme submitted by the Contractor, as updated with the approval of the Engineer, and complete them by the Intended Completion Date.

17. Approval by the Engineer

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

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

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

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

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

18. Safety

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

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

18.2. Safety Programs:-

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

18.3. First Aid Facilities: -

- i. At every work place there shall be provided and maintained, so as to be easily accessible during working hours, first-aid boxes at the rate of not less than one box for 150 contract labour or part thereof ordinarily employed.
- ii. The first-aid box shall be distinctly marked with a red cross on white 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/ equipments 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.

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

- 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 a 7 days of award of the work, submit a list of at least three RMC/Asphalt producers with details of such plants including details and number of transit, mixers & pumps etc. to be deployed indicating name of owner/company, its location, capacity, technical establishment.

The Engineer-in-charge will reserve 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 contractor 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 equipments as specified in the Contract Data. The contractor shall be solely responsible for:

- a. Carrying out the mandatory tests prescribed in the Specifications, and
- b. For the correctness of the test results, whether preformed in his laboratory or elsewhere.

29.2. If the Engineer instructs the Contractor to carry out a test not specified in the Specification/ Quality Assurance Handbook to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no defect, the test shall be a compensation event.

When required by the Engineer-in-charge the contractor(s) shall supply for the purpose of testing samples of all materials proposed to be used in the works. Samples submitted either to govern bulk supplies or required for testing before use shall be in suitable packages to contain them and shall be provided free of charge by the contractor. The cost of testing shall be borne by the contractor even if the result of the sample confirm or do not confirm to the relevant BIS code specifications.

- i. All expenditure required to be incurred for taking the samples conveyance, packing shall be borne by the contractor himself.
- ii. The failed material shall be removed from the site by the contractor at his own cost within a week time of written order of the Engineer-in-charge.

29.3. Setting of Site Laboratories:

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 equipments 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

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

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 and Fair Items shall be governed as per the circular No. CA (F)/Project/31 Dt. 26/10/2020 or prevailing circular in this regard.

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 unskillful work to be removed or taken away and reconstructed or re-erected nor shall any such payment be considered as an admission of the due performance of the contract or any part thereof in any respect or the offering of any claim not shall it conclude, determine or effect in any other way, the powers of the Engineer In-charge as to the final settlement and adjustment of the accounts or otherwise, or in any other way vary or effect the contract. The final bill shall be submitted by the Contractor within one month of the date fixed for the completion of the work otherwise the Engineer In-charge's certificate of the measurements and of the total amount payable for the work shall be final and binding on all parties.

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

GST and other state levies/cess which are not subsumed under GST will be applicable. The tenderer shall quote inclusive of all taxes applicable at the time of bid submission. It is clearly understood that BMC will not bear any additional liability towards payment of any Taxes & Duties.

Wherever the services to be provided by the Tenderers, falls under Reverse Charge Mechanism, the Price quoted shall be exclusive of GST, but inclusive of Taxes/Duties/Cess other than GST, if any.

Rates accepted by BMC shall hold good till completion of work shall be admissible on account of fluctuations in market rates; increase in taxes/any other levies / tolls etc. except that payment/recovery for overall market situation shall be made as per Price variation and if there is any subsequent change (after submission of bid) in rate of GST applicable on the work/services to be executed as per tender, i.e. any increase will be reimbursed by BMC whereas any reduction in the rate of GST shall be passed on to BMC as per the provisions of the GST Act.

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 Crs.	Rs.10 Lacs or final bill whichever is more
2	Up to Rs.25 Crs.	Rs.1 Crore or final bill amount whichever is more
3	Up to Rs. 50 Crs.	Rs.2 Crores or final bill amount whichever is more
4	Up to Rs.100 Crs.	Rs.4 Crore or final bill amount whichever is more
5	More than Rs.100 Crs.	Rs.7 Crore or final bill amount whichever is more

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

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

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 unrecovered 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

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

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 also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.
- c) The Contractor shall require his employees to obey all applicable laws, including those concerning safety at work.
- d) The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

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 upto 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 equipments for e-governance and electronic and digital communication. These offices are not to be allowed on public roads without the written instruction of the Engineer. ~~These offices should be preferably located within 50 to 500 m of the worksite. In case the office is more than 500m away from the worksite, the contractor is to provide conveyance. Also, for staff working beyond working hours the contractor has to provide conveyance.~~

7. Permission for provision and removal of office on completion of work:

The tenderer shall obtain permission for provision of site office, cement go-down, store, etc. on payment of necessary cost implication. The cement go-down, Watchman cabins, etc. shall be provided as directed and shall be removed by the Tenderers on completion of the work at their cost. It is binding on the Tenderer to fulfill requirements of Environmental Authorities. The location of such office shall be finalized and got approved from the Engineer before erection/commencement work.

- 8. Contractor's office near works:** The Contractor shall have an office near the works at which notice from the Commissioner or the Engineer may be served and shall, between the hours of sunrise and sunset on all working days, have a clerk or some other authorized person always present at such office upon whom such notices may be served and service of any notices left with such clerk or other authorized person or at such office shall be deemed good service upon the Contractor and such offices shall have pre-requisite facilities for e-governance.

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 statute, Ordinance, decree or other law or any regulation or By-laws or any local or other duly constituted authority or the introduction of any such National or State Statute,

Ordinance, decree or by which causes additional or reduced cost to the Contractor, such additional or reduced cost shall, after due consultation with the Contractor, be determined by the concerned Engineering Department of BMC and shall be added to or deducted from the Contract Price with prior approval of competent authority and the concerned Engineering Department shall notify the Contractor accordingly with a copy to the Employer. BMC reserve the right to take decision in respect of addition/reduction of cost in contract.

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-charge within 1 month of the case of such claim occurring.

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

It is agreed that the Brihanmumbai Municipal Corporation or its Engineer or Officer shall not be liable to pay any interest or damage with respect of any moneys or balance which may be in its or its Engineer's or officer's hands owing to any dispute or difference or claim or misunderstanding between the Municipal Corporation of Greater Bombay or its Engineer or Officer on the one hand and the contractor on the other, or with respect to

any delay on the part of the Municipal Corporation of Greater Bombay or its Engineer or Officers in making periodical or final payments or in any other respect whatever.

73. Settlement of Disputes:

- **Termination of contract for death**

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

- **Settlement of Disputes:**

If any dispute or differences of any kind whatsoever other than those in respect of which, the decision of any person is, by the Contract, expressed to be final and binding) shall arise between the Employer and the Contractor or the Engineer and the Contractor in connection with or arising out of the Contract or carrying out of the Works (Whether during the progress of the Works or after their completion and whether before or after the termination, abandonment or breach of the Contract) it, the aggrieved party may refer such dispute within a period of 7 days to the concerned Addl. Municipal Commissioner who shall constitute a committee comprising of three officers i.e. concerned Deputy Municipal Commissioner or Director (ES&P), Chief Engineer other than the Engineer of the Contract and concerned Chief Accountant. The Committee shall give decision in writing within 60 days. Appeal on the Order of the Committee may

be referred to the Municipal Commissioner within 7 days. Thereafter the Municipal Commissioner shall constitute a Committee comprising of three Addl. Municipal Commissioners including Addl. Municipal Commissioner in charge of Finance Department. The Municipal Commissioner within a period of 90 days after being requested to do so shall give written notice of 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 fails to give notice of the decision as aforesaid within a period of 90 days after being requested as aforesaid or if the contractor is dissatisfied with any such decision, then the contractor may within 90 days after receiving notice of such decision or within 90 days after the expiration of the first named period of 90 days (as the case may be) require that the matter or matters in dispute be referred to arbitration as hereinafter provided.

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

appoint mutually agreed arbitral tribunal, within the period of 30 days from the date of application seeking arbitration in the dispute, the arbitral tribunal shall be appointed by the recognised arbitral institution i.e. Mumbai Centre for International Arbitration (approved by Government of Maharashtra under G.R. no. ARB/Case No. 1,/2017/D-19 dtd.28.02.2017) as per the Arbitration Rules of the Mumbai Centre for International Arbitration then in force ("MCIA Rules").

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

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

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

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:

$$V_L = \frac{(0.88 R) \times 30}{100} \times \frac{(I - I_0)}{I_0}$$

b) Formula for Material component :

$$VM = \frac{(0.88 R \times 70 - C)}{100} \times \frac{(W - W_0)}{W_0}$$

Where -

V_L = 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).

I_0 = 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.

V_M = 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.

W_0 = Wholesale price index as stated above prevailing on the day of 28 days prior to the date of submission of the tender.

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

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

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

Computations based on the above formula will be made for the period of each bill separately and reimbursement will be made to (when the result is plus) and refund will 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:

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

Note:

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

For example:

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

Price Variation during Extended Period of Contract:

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

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

Interim Payment :

i) Interim bills shall be submitted by the Contractor from time to time (but at an interval of not less than one month) for the works executed. The Engineer shall arrange to have the bills verified by taking or causing to be taken, where necessary, the requisite measurement of work.

- ii) Payment on account for amount admissible shall be made on the Engineer certifying the sum to which the Contractor is considered entitled by way of interim payment for all the work executed, after deducting there from the amount already paid, the security deposit / 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 upto 75 percent of the value of the work carried out as an adhoc payment in the first week of next month after deducting there from recoveries on account of advances, interest, 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

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 thereof.
- ii. **Duration of the Joint Venture Agreement** -It shall be valid during the entire period of the contract including the period of extension if any and the maintenance period after the work is completed.
- iii. **Governing Laws** - The Joint Venture Agreement shall in all respect be governed by and interpreted in accordance with Indian Laws.
- iv. **Authorized Member** -Joint Venture members shall authorize one of the members on behalf of the Joint Venture firm to deal with the tender, sign the agreement or enter into contract in respect of the said tender, to receive payment, to witness joint measurement of work done, to sign measurement books and similar such action in respect of the said tender/contract. All notices/correspondences with respect to the contract would be sent only to this authorized member of the JV firm.

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

- n) **Documents to be enclosed by the JV firm along with the tender:**

- i. In case one or more of the members of the JV firm is/are partnership firm(s), following documents shall be submitted:
 - a. Notary certified copy of the Partnership Deed,
 - b. Consent of all the partners to enter into the Joint Venture Agreement on a stamp paper of appropriate value (in original).
 - c. Power of Attorney (duly registered as per prevailing law) in favor of one of the partners to sign the MOU and JV Agreement on behalf of the partners and create liability against the firm.
- ii. In case one or more members is/are Proprietary Firm or HUF, the following documents shall be enclosed:
 - a. Affidavit on Stamp Paper of appropriate value declaring that his Concern is a Proprietary Concern and he is sole proprietor of the Concern OR he is in position of "KARTA" of Hindu Undivided Family and he has the authority, power and consent given by other partners to act on behalf of HUF.
- iii. In case one or more members is/are limited companies, the following documents shall be submitted:
 - a. Notary certified copy of resolutions of the Directors of the Company, permitting the company to enter into a JV agreement, authorizing MD or one of the Directors or Managers of the Company to sign MOU, JV Agreement, such other documents required to be signed on behalf of the Company and enter into liability against the company and/or do any other act on behalf of the company.
 - b. Copy of Memorandum and articles of Association of the Company.
 - c. Power of Attorney (duly registered as per prevailing law) by the Company authorizing the person to do/act mentioned in the para (a) above.

- o) All the members of the JV shall certify that they have not been black listed or debarred by BMC from participation in tenders/contract in the past either in their individual capacity or the JV firm or partnership firm in which they were members / partners.
- p) Credentials & Qualifying criteria: Technical and financial eligibility of the JV firm shall be adjudged based on satisfactory fulfilment of the following criteria:

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 average annual contractual payments received by the JV firm or the arithmetic sum of average annual contractual payments received by all the members of JV firm, in proportion to their share in JV, in last three financial years shall be at least 30 % 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 or 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 equipments so provided by the contractor and the contractor shall take adequate steps to ensure the proper use of equipments by those concerned.
- (iv) When the work is carried on in proximity to any place where there is risk or drawing all necessary equipments 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 any 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.

SECTION 10

SPECIAL CONDITIONS OF CONTRACT

SPECIAL CONDITIONS OF CONTRACT

The following modifications made to the clauses of the General Conditions of Contract under this chapter shall prevail over the respective clauses of General Conditions of Contract under Section 9 of the tender.

(1) GCC Clause No. 83. Joint Venture

- a) A joint venture of not more than two (2) firms / entities may also participate in the bidding. The joint venture entities shall follow the following principles.
- 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 two.
- 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 member shall have a share of not less than 26%. 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. JV member shall not sell / transfer / alter their shares / stakes in the JV during entire validity of the contract including extended period and the defect liability period. In case the tenderer fails to observe /comply with this stipulation, the full Earnest Money Deposit (EMD) shall be forfeited. In case of successful tenderer, the validity of this agreement shall be extended till the currency of the contract expires.
- j) Approval for change of constitution of JV firm shall be at the sole discretion of the BMC. The constitution of the JV firm shall not be allowed to be modified after

submission of the tender bid by the JV firm except when modification becomes inevitable due to succession laws etc. and in any case the minimum eligibility criteria should not get vitiated. In any case the Lead Member should continue to be the Lead Member of the JV firm. Failure to observe this requirement would render the offer invalid.

- k) Similarly, after the contract is awarded, the constitution of JV firm shall not be allowed to be altered during the currency of contract except when modification become inevitable due to succession laws etc. and in any case the minimum eligibility criteria should not get vitiated. Failure to observe this stipulation shall be deemed to be breach of contract with all consequential penal action as per contract condition.
- l) On award of contract to a JV firm, a single Performance Guarantee shall be required to be submitted by the JV firm as per tender conditions. All the Guarantees like Performance Guarantee, Bank Guarantee for Mobilization advance, machinery Advance etc. shall be accepted only in the name of the JV firm and no splitting of guarantees amongst the members of the JV firm shall be permitted.
- m) On issue of LOA, an agreement among the members of the JV firm (to whom the work has been awarded) has to be executed and got registered before the Registrar of the Companies under Companies Act or before the Registrar / Sub-Registrar under the Registration Act, 1908. This agreement shall be submitted by the JV firm to the BMC before signing the contract agreement for the work. (This agreement format should invariably be part of the tender condition). In case the tenderer fails to observe/comply with this stipulation, the full Earnest Money Deposit (EMD) shall be forfeited and other penal actions due shall be taken against partners of the JV and the JV. This joint venture agreement shall have, inter-alia, following clauses:-
 - i) **Joint and several liability** - The members of the JV firm to which the contract is awarded, shall be jointly and severally liable to the Employer (BMC) for execution of the project in accordance with General and Special conditions of the contract. The JV members shall also be liable jointly and severally for the loss, damages caused to the BMC during the course of execution of the contract or due to no execution of the contract or part thereof.
 - ii) **Duration of the Joint Venture Agreement** -It shall be valid during the entire period of the contract including the period of extension if any and the maintenance period after the work is completed.
 - iii) **Governing Laws** - The Joint Venture Agreement shall in all respect be governed by and interpreted in accordance with Indian Laws within jurisdiction of competent court in Mumbai city.
 - iv) **Authorized Member** -Joint Venture members shall authorize one of the members on behalf of the Joint Venture firm to deal with the tender, sign the agreement or enter into contract in respect of the said tender, to receive

payment, to witness joint measurement of work done, to sign measurement books and similar such action in respect of the said tender/contract. All notices/correspondences with respect to the contract would be sent only to this authorized member of the JV firm. No member of the Joint Venture firm shall have the right to assign or transfer the interest right or liability in the contract without the written consent of the other members and that of the employer in respect of the said tender/contract.

n) **Documents to be enclosed by the JV firm along with the tender :**

- i) In case one or more of the members of the JV firm is/are partnership firm(s), following documents shall be submitted:
 - a. Notary certified copy of the Partnership Deed,
 - b. Consent of all the partners to enter into the Joint Venture Agreement on a stamp paper of appropriate value (in original).
 - c. Power of Attorney (duly registered as per prevailing law) in 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 12.4 above.

- o) All the members of the JV shall certify that they have not been blacklisted 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 adjusted based on satisfactory fulfillment of the following criteria:

Technical eligibility criteria: The Technical Eligibility Criteria as stipulated in the tender document shall be met either by any one member or by both members of Joint Venture Collectively. However, the lead member of the JV firm shall meet at least 35% requirement of Technical Capacity as stipulated in the tender.

Financial eligibility criteria: The average annual contractual payments received by the JV firm or the arithmetic sum of average annual contractual payments received by all the members of JV firm, in proportion to their share in JV, in last three financial years shall be at least 30 % of the estimated value of the work as mentioned in the tender.

(2) GCC Clause No. 81 - Interim Payment -

Sub Clause- (iii) Adhoc payment - Not Applicable

(3) GCC Clause No. 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/ equipments 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.
- 23.6. The milestones set for the instant tender shall be as under:

Milestone No. 1

Completion of rehabilitation of 2 km length of sewer lines in 6 months from date of commencement of work.

Milestone No. 2

Completion of rehabilitation of cumulative 5.5 km length of sewer lines in 12 months from date of commencement of work.

Milestone No. 3

Completion of rehabilitation of cumulative 9 km length of sewer lines in 18 months from date of commencement of work.

Milestone No. 4

Completion of rehabilitation of cumulative 12 km length of sewer lines in 24 months from date of commencement of work.

If the milestones set are not achieved in stipulated time, the penalty of Rs. 10,000/- per day per Milestone will be deducted from the contractor's RA bills till completion of the respective milestone. The total amount of penalty shall not exceed 10 % of accepted contract cost. If the attainment of the milestones is delayed for reason not attributable to the contractors no moneys will be deducted.

(4) GCC Clause No. 68(5) – Office for the Engineer (Works costing up to Rs. 50 Lakh) -
Not Applicable

(5) GCC Clause No. 68(6) – Office for the Engineer (Works costing above Rs. 50 Lakh) -

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 equipments 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.

SECTION 11

SPECIFICATIONS

SPECIFICATIONS

Subject: Rehabilitation of 600 mm dia. to 900 mm diameter sewer lines by Trenchless Technology.

1 General Requirement

1.1 Specification

These specifications are intended for general description of site conditions, scope of work and requirements, products, execution, quality of workmanship and finished work. They are not intended to cover minute details. The work shall be executed in accordance with best modern practices and using special techniques.

The Contractor shall read this Technical Specification in conjunction with the standard specification of the Brihanmumbai Municipal Corporation for Sewerage Works and other documents and technical manual, papers, guidelines, standards and specification etc. referred to in the specification. For Civil, Mechanical & Electrical works, BMC's respective standard specifications shall be applicable during execution of the project. Bidders are requested to get acquainted with the same before bidding.

1.2 Contractor's Obligation

The clauses in this section are meant to provide general guidelines and compliance requirements to the Contractor. It does not however relieve the Contractor from (a) taking all precautions as deemed necessary to complete the work successfully within the specified contract period and bided amount and (b) his prima facie obligation and responsibility under the contract to successfully execute the work without causing interruptions to road and pedestrian traffic.

It is deemed that the Contractor's rates in the Bill of Quantities are for successfully execution of work activities included in the scope of works within the specified contract period regardless of the method considered as suitable in this specification.

1.3 Background Information Project

1.3.1 Geographical Location

Mumbai is the capital of the State of Maharashtra in the Republic of India. It is located on the West Coast of India at latitude 19°N and longitude 72° 50'E. It is

an island connected with main land by road, rail and air. The city and suburbs are administered by the Brihanmumbai Municipal Corporation (BMC).

The annual rainfall in Mumbai is of the order of 2000 mm, most of which is precipitated within 4 months of monsoon from June to September, leaving a dry working period of 8 months from October to May. Mean daily temperature varies from about 22° C to 36° C, the hotter months generally being March, April, May and June.

The relative humidity is generally between 48% and over 90% highest being in the monsoon period from June to September. Some of the suburban areas are reclaimed land and the water table is generally high.

The city is well connected to other Indian and international cities by air and land.

1.3.2 Geology and Soil

The Mumbai area was formed geologically, through volcanic effusions and deposition of marine strata. The area also has tuffs, tuffaceous breccias and volcanic ashes which are all much softer than the basalt trap rock.

Mumbai Soil essentially consists of clay, with the particular nature of the top soil varying depending upon the location. However, since as more than 50% of the area has been raised through reclamation, the surface material often reflects the nature of the fill material used. In general, a 1-1.5m topsoil / fill layer, overlaying clay of depth varying between about 3.5 m to 7.0 m. The clay layer is followed by a layer of 'murrum' which is supported, in turn, on weathered basalt rock, tuffs or tuffaceous breccias. In reclaimed areas, the top soil may vary in depth from 1m to 3m and generally comprises fill materials varying from loose boulders and pieces of weathered rock, to well compacted clay. In general, the ground conditions for most of the area can be classified as good with respect to the construction of sewer lines. It may be possible to get rock at very shallow depth and sewers in such cases might have a rock.

Contractor shall make reference to detailed geological survey maps for Mumbai areas from the relevant authorities for further details on the ground conditions.

1.3.3 Tidal Data

Sea water levels are recorded in the Automatic Gauge Recorder at Apollo Bunder. The tidal cycle is twice daily, but because of an appreciable diurnal element, unequal tides are produced on most days causing wide variation in extreme levels. This variation is sufficient to cause lowest high water to be lower than the highest low water level. Statistical studies indicate that:

1. All high tides exceed +2.70 m.
2. About 5% of all high tides would be less than +3.20 m.

There is a considerable impact of the tidal effects to the sewage conveyance system. Since there are believed to be a number of interconnections between sewage conveyance system and storm water drains, sea water finds its way to sewers under high tide conditions.

1.3.4 Flooding Spots

Flooding can occur in the city area as a result of a number of factors including rainfall, rainfall in conjunction with high tides and Storm Drain blockages or collapses. There appears to be little reported evidence for sewage flooding as a direct result of inadequate sewer hydraulic capacity, though part of the sewage may be flowing in the storm water drainage system. No work on sewers shall be permitted during monsoon season. Similarly no excavation shall be permitted during notified period. The intrusion of the storm water flow in the sewage system is to increase the hydraulic load on both the conveyance and pumping systems and due to its effect on the sewer infiltration / leakages, may result in possible disturbance of the ground in areas with fine granular or poor soil conditions.

1.3.5 Ground Water

A systematic hydro-geological survey of Brihanmumbai Municipal Corporation areas was carried out by Central Ground Water Board (CGWB) in 1989-90, based on the measurement of the water levels in open wells in Greater Mumbai and the adjacent hinterland areas. During both pre and post monsoon periods it was observed that the water levels were between 0 and 2m depth in coastal areas (low lying tracts) 2 and 4 m or more in the central elevated part of Salsette, Trombay and Southern tip of Bombay island. In most of Greater Mumbai, the seasonal fluctuation was less than 2 m and in 1989 it worked out to only 0.76 m. Seasonal fluctuation of ground water table in the central elevated part varied between 0 to 6.59 m. The data pertaining to the groundwater table confirms that the majority of the sewer lines and almost all the normally deep sewers remain below the groundwater table throughout the year.

The ground water during monsoon period is expected to be high and some time it is up to the ground level. For the purpose of designing liners, the Contractor shall consider that the ground water level is up to the ground level.

1.4 Mumbai Sewerage System

1.4.1 BMC Sewers

BMC is responsible for providing sewerage facilities for the city and suburbs, covering an area of about 438 sq. km. There are seven sewerage catchment areas, namely Colaba, Worli, Bandra, Versova, Malad, Bhandup and Ghatkopar and 54 pumping stations in the Brihanmumbai.

Presently, the urban area of Mumbai is being served by a gravity collection sewerage system involving a network of branch sewers, intercepting sewers and trunk sewers having total length of about 2026 km.

Sewerage network comprising of sewer lines and manholes is now available on a GIS system. The GIS information is available for inspection in the Sewerage Utility Management Centre (SUMC) at Dadar. Any bidder desirous of inspecting the same may do so at his own cost.

1.4.2 Manholes

The manholes constructed on the sewerage system in Mumbai are usually conical tapering manholes and trapezoidal and square scraper manholes. The conical manhole is provided with the clear opening of approximately 470 mm to 560 mm at the top while the opening for trapezoidal manholes is 0.6m x 0.9m and that for scraper type is 1.2m x 0.9m. The bottoms of the conical manholes are 1.2, 1.5m, 1.8m diameter. The bottoms of the scraper manholes on sewers under reference are 1.5m or 1.8m square. Some of the manholes are rectangular vertical type having size approximately 350 x 700 mm. For easy access to the sewer body, the manholes are generally provided at a distance of 30m.

1.5 Contractor's responsibility of ascertaining extent of work

The Contractor is deemed to have visited the sites and familiarised himself of the conditions, restrictions and constraints as well as any differences from drawing etc. under which the work will be executed. The omission of any details shall not relieve the Contractor of his prima facie obligation and responsibility under the Contract to carry out and successfully complete the works. No monetary or other claims, made by the Contractor on the grounds of want of knowledge will be entertained by the Employer.

The Contractor is advised that it is his sole responsibility to ascertain for himself the extent of work that is required to be done in site and to generally obtain his own information on all matters affecting directly or indirectly the execution of the whole works involved in the contract to the complete satisfaction of the Engineer. No claim of extras in consequence of any alleged ignorance in any

aspect will be entertained by the Engineer. It must be clearly and definitely understood that the contractor shall be held solely responsible for making all necessary arrangement and coordination with relevant authorities, competent agencies and specialist contractor's principals and technology providers, etc., and obtaining necessary permissions in time by paying all the applicable, to ensure satisfactory completion of the Contract.

1.6 Performance Requirements

The performance requirements are spelt out in various parts of the contract specification and the Contractor shall ensure that he fully understands and complies with all the requirements specified in the contract. However, in the event of any conflicting performance requirements in the documents, the Contractor shall promptly bring such matters in writing to the attention of the Engineer for a clarification and/or decision. The Engineer's decision will be conveyed to the Contractor in writing and his decision shall be final. The Contractor shall fully comply with Engineer's decision on the matter.

The Contractor is deemed to have studied site conditions, adequacy / suitability of the methodology to be proposed, read and understood all the performance requirements before pricing the Contract and he shall have no claim whatsoever with respect to the Engineer's final decision on the matter.

1.7 Confined Space Safety Procedure for Working in Live Sewers / Manholes

The Contractor shall ensure that all the necessary safety requirements for persons working in sewers, manholes, chambers, and all other sewerage installations are fully complied with all statutory safety requirements and provisions in the BMC's general safety precautions, NHRC guidelines, Competent Courts, OSHA regulations, Prohibition of Employment as Manual Scavengers and Their Rehabilitation Rules, 2013 (MS Rules 2013) and any other applicable rules, guidelines, amendments in this regards and the clauses in the specification. The requirements and precautions to be taken when working in confined space and in live sewers are specified in the specification Part 10- Guidelines for Safe Entry and Working inside Sewers.

1.8 Electrical Power, Water Supply

The Contractor shall at his own cost, arrange for electrical power and water required for the execution and completion of the Work.

1.9 Rates to include all method related costs

The bidder is required to quote his rate for the methodology proposed by him

and approved by the Engineer.

It is deemed that the rates offered by the Contractor are inclusive of everything required to comply with all the required provisions as above and any additional requirements including sewer isolation, plugging, flow diversion, traffic management, etc. as necessary to carry out the work safely and successfully. The Contractor is also deemed to have considered for any method related contingencies in his rates. Innovation in relation to the best specified methodology and the best practice is encouraged and the Employer will consider all the options to get the best methodology at competitive price. Hence, sufficient documentation must be submitted with the Technical Schedules of the bid to enable the Employer to carry out an initial investigation and appraisal of the product and the method offered and to ascertain the benefit and the advantage of the methodology to the Employer.

1.10 Co-operation with other Contractors and operational facility

The Contractor is advised that there may be other Contractors (i.e. from PWD, MMRDA, other department of BMC or other authorities like Metro, MGL, Private Utility Providers, etc.) working within the site area. The Contractor may therefore be given joint possession, in some sections of the sites, with the other Contractors for the purpose of carrying out his contractual obligation and he shall in no way interfere with, impede or otherwise prevent these other Contractors, from carrying out their contractual obligations. The contractor shall coordinate with all such contractors / agencies and plan / liaison his activities for successful and timely completion of his contract. The Contractor shall allow in his prices, when bidding, for affording reasonable facilities to the other Contractors and for any interference with his work from these other contract operations.

No claim on account of this clause will be entertained by the BMC and his prices are to include for such contingency.

The contractor shall note that it is the responsibility of the contractor to co-ordinate and arrange meetings with Utility Companies or the Government or Municipal departments. The Corporation would arrange to give authority letters to the contractor for arranging such meetings. The Engineer's representative shall be present in such meetings. The Corporation is not contractually bound to accept what transpired in any meetings or discussions in which the Engineer or the Corporation was not represented.

1.11 Transport of Materials

It shall be noted by the Contractor that the transport of the equipments and materials and movement of vehicles overland will be subject to regulation of transport by various statutory authorities. The same will be applicable for materials and equipments required to be imported for the contract. The Contractor's rates/prices shall include for all costs arising from the imposition of traffic hours restriction by the Traffic Police, import export duties and other shipping charges as applicable. The Bidder is advised to obtain accurate information from the concerned authorities before bidding for the work.

1.12 Assistance for the Engineer's Staff

The Contractor shall provide all necessary assistance to the BMC/Engineer's Representative and his staff in carrying out their duties of checking the setting-out, inspecting and measuring the works. The Contractor shall provide chainmen, staff-men, office attendants and labourers as may be needed from time to time by the Engineer's Representative. One labourer shall be deployed at all times at the Engineer's site office to assist the Engineer.

The Contractor shall provide for the Engineer's Representative and his staff such protective clothing, safety helmets and rubber boots of suitable sizes, hand lamps and the like as may be reasonably required by them. These articles shall remain the property of the Contractor.

1.13 Access and Site Roads

The contractor shall construct, maintain and afterwards remove and reinstate site roads and accesses required for the execution of the works. The reinstatement of the roads shall be as per the latest norms and guidelines / circular of BMC. Unless the Contract otherwise provides, the cost of such works shall be borne by the Contractor.

1.14 Use of I.S. Specifications

In case no particular specification is given for any work to be done under the contract, the relevant specifications, where exists, of the Indian Standard Institutions shall apply.

1.15 Claims for Damage to Persons or Property

Any claim received by the Employer in respect of matters in which the Contractor is required under the Contract to indemnify the Employer will be passed to the Contractor who shall likewise inform the Employer of any such claim which is submitted directly to him by a claimant.

The Contractor shall do everything necessary, including notifying the insurers of claims received, to ensure that all claims are settled properly and expeditiously and shall keep the Employer informed as to the progress made towards settlement, failing which the Employer shall be entitled to make direct payment to claimants of all outstanding amounts due to them in the Employer's opinion and without prejudice to any other method of recovery to deduct by way of set-off the amounts so paid from sums due or which become due from the Employer to the Contractor.

If the Contractor receives a claim which he considers to be in respect of matters for which he is to be indemnified by the Employer under the Contract, he shall immediately pass such claim to the Employer. All information as aforesaid shall be given in writing and shall be copied to the Engineer's Representative.

1.16 Existing Services

The Contractor shall take all due care and necessary precautionary measures to ensure that no damage occurs to any existing sewer, water or gas mains, electricity or telephone cables culverts and any other existing services. Any damage arising out of the Contractor's work in such respect will be met with entirely by the Contractor and no claim to the contrary will be entertained by the Corporation.

1.17 Working Space

The Contractor shall note that within probable sewer projected area on surface or immediately adjoining the outside of the sewer reserves, other services may have already been laid and his attention is particularly drawn to his responsibility for the maintenance of other services. The Contractor will be allowed working space outside reserves, where approval for its use is obtainable by him from the owners/authorities, but the Contractor will be required to limit his working space where obstruction to traffic is likely or access to adjoining sites or services is affected.

Any additional working space required by the Contractor will be entirely the Contractor's responsibility and he will be required to obtain all necessary consents, pay all the costs arising out of compensation, etc. and reinstate the land affected to the satisfaction of the owner and the Engineer.

1.18 Bench Mark

The Contractor shall establish substantial bench marks and fixed points on the site to the Engineer's direction and shall ensure that these are not damaged or

disturbed. All such bench marks and fixed points must be referred to a Master Bench Mark and follow Town Hall Datum (THD) as maintained by the BMC. All survey works shall be compatible to upload the information into the GIS system maintained by BMC after the approval of the Engineer.

1.19 Contractor's Plant/Equipment

All mechanical plants/Equipments used by the Contractor in the execution of the Works must be of such type, size and of such method of working as the Engineer shall approve.

The Engineer's approval to the use of mechanical plants/Equipments will not be unreasonably withheld, but if in the Engineer's opinion, circumstances arise which make it desirable that the use of plants should be suspended either temporarily or permanently, the Contractor shall change the method of performing the work affected at his own cost and he will be deemed to have no cause for claim against the Corporation on account of having to carry on the work by another method nor will he be deemed to have cause for claim if any order issued by the Engineer results in the mechanical plant/Equipment having either to stand idle for a period of any duration whatsoever or to be removed.

This clause shall apply also to plants which, in the opinion of the Engineer, are not as quiet in operation as the circumstances seem to the Engineer to warrant.

The Contractor shall use every possible means to prevent noise and annoyance to the residents of the neighbourhood in which the works and the Contractor's depots are situated and all machinery must be of such design and so arranged to be reasonably free of noise in working.

In the event of air compressors or pneumatic tools being used on the Works, the Contractor shall, if and when required by the Engineer, arrange for such compressors or tools to be fitted with silencers of approved design or adopt other means approved by the Engineer for the purpose of reducing noise as far as possible to the desired decibel limits.

The Contractor will not be allowed to make any extra charge for work or expense incurred in complying with the requirements of this clause.

1.20 Drain and Water-Course

The contractor shall level and clear undergrowth and also provide for the temporary diversion of such existing drains, water courses or land springs as are interfered with during the progress of the works. Any drains or water courses so diverted must be reconstructed in their original positions on completion of the

works. Where drains or open ditches occur, the Contractor will be responsible for keeping these free of excavated material and ensuring the free flow of water.

1.21 Anti-pollution and Mosquito Control

The site and working areas shall be maintained at the Contractor's expense in accordance with current existing regulations governing anti-pollution and mosquito control and other civic statutory requirements of maintaining healthy site conditions all the time.

1.22 Safeguarding Properties Adjacent to Site

Where work is undertaken near or adjacent to buildings and in the opinion of the Engineer, the stability of such buildings is liable to be affected as a result of the work, he shall arrange to have such buildings inspected and to have record any cracks or any other defects which may be affected by the work. Every precaution should be taken by the Contractor to safeguard such building or structure and they should be to the complete satisfaction of the Engineer. The Contractor may be directed by the Engineer to excavate in such lengths of excavation as will permit the least amount to be opened at one time in order to minimize to danger of such open excavation affecting the stability of buildings or their supports.

The Contractor will be held responsible for damage to public, private or other buildings and properties adjacent to the site of the works which is caused as a direct or indirect result of the Contractor's work. Should the Contractor fail to take the necessary precautions the Engineer may, after giving the Contractor twenty-four (24) hours notice in writing, carry out such work as may be necessary using Corporation labour, material, plant, implements and transport. The cost of such work will be charged to the Contractor.

The Contractor must take due care to safeguard all existing services, such as water, sewer or gas mains, electricity telephone cables, required to excavate trial pits in advance of the Works and determine accurately the position of mains, pipes etc. The Contractor shall notify the Engineer of any mains, pipes or conduits met which in trial pits or excavation and shall take steps to support and protect these to the satisfaction of the Engineer. The Contractor will be responsible for any damage done to mains, cables, culverts and other services, inside or outside the excavation as a result of earth movement, faulty timbering, excessive weight of excavated material being deposited too close to open trench, leaving the excavation open for an unduly long period or to any form of settlement following backfilling.

No work done by the Engineer or his workmen nor the fact that the timbering has complied with this Specification or neither requirements of the Engineer nor the approval of proposed or completed timbering etc, by the Engineer shall absolve the Contractor from his responsibilities and he will be required to make good any damage caused as a result of the timbering failing to give proper support to the sides of the excavation.

Furthermore, the Contractor is required to conform to any other safety and fire regulations that may be introduced from time to time.

1.23 Method of Working

The Contractor is required to carry out the Works in the manner detailed herein, shown on the drawings and normally adopted. He is at liberty to supply with his Bid such modification as he proposes for consideration and shall seek approval from the Engineer before he is allowed to apply new or changed methods for execution of the work. Notwithstanding any Specification, approval of decision given by the Engineer as to the carrying out of the Works, the Contractor will be wholly liable for the safety of the works, both temporary and permanent and for the completion of the Contract to the satisfaction of the Engineer.

1.24 Traffic Permissions

As directed by Municipal Commissioner of BMC vide circular no. MGC/A/2035 dated 24.01.2020, the proposed work are to be executed with intimation to the traffic department in advance to facilitate traffic diversion. The contractor shall prepare traffic management plan so that the vehicular & pedestrian traffic is least affected.

It must be clearly and definitely understood that the contractor shall be held solely responsible for making all necessary arrangement and co-coordinating with traffic authorities to facilitate traffic diversion, in time to work in the designated stretches.

It is deemed that the rates offered by the Contractor have included everything required to comply with all the required provisions as above and any additional requirements as necessary to carry out the work under the scope of the contract smoothly.

1.25 Special Traffic Precautions

The Contractor's attention is specially drawn to the requirements by the traffic police and road authorities and Specifications regarding Traffic Control, Access and the Reinstatement of road surfaces etc. It is quite likely that movements of

heavy vehicles (trucks/dumpers/tankers etc) may be regulated or prohibited by the authorities during certain period of the day. The Contractor shall plan his activities with due regards to such restrictions/regulations in coordination with traffic authorities.

The Contractor's progress/programme and road opening schedule must be arranged in details for discussion with the Engineer and the Traffic Police. The sewer stretches under the scope must be broken into suitable sections and wherever necessary, special traffic diversions shall be arranged.

Whenever carriage ways are affected, the Contractor must arrange to contain the works within the narrowest possible area. The Contractor shall carry out the work in such a manner as to cause minimum interference with the public use of roads, footpaths and other through fares. All workmen working on roads are required to wear approved retro-reflective vests and other safety measures at all times during execution of work. The Contractor shall, include in his rates for compliance with all the conditions stipulated above.

The work sites must be barricaded in accordance with standard methods as specified in the General Conditions of Contract for construction works of BMC.

It will be entirely responsibility of the contractor to provide and install secure barricades on the work site, wholly at his cost. The specification and drawings of the barricades to be provided are as per Circular u/no. MGC/F/6342 dated 5.5.2018 Annexed.

1.26 Traffic Control

The Contractor will be required to arrange the work sites and order of working in or alongside carriageways to minimize the interference with the free flow of traffic and shall take all measures and precautions required by the Traffic Police, Road Authorities and the Engineer for the safety and convenience of traffic.

The stretches of work sites must be arranged in length to ensure free flow of road traffic in such a manner to be consistent with good progress in execution of work.

The Contractor must provide and maintain at each work site proper and efficient automatic traffic lights operating day and night for the full duration of the Works. The use of stop and go boards will not be accepted as an alternative to traffic lights at the main work sites.

1.27 Road Opening

The works intended under this contract are essentially required to be executed by absolute trenchless technique and any excavation needed by the contractors for the purpose of accessing the sewer line shall be kept as minimum as possible. Excavation needed for the purpose of diversion of flow to the nearest manhole shall also be kept to bare minimum.

In case, if opening of road or excavating upper portion of the manhole is necessary, the Contractor shall submit a detailed road opening schedule to the Engineer for approval. The Contractor shall contain the works within the narrowest possible area when opening the road for access to sewer line.

Traffic flow must be maintained at all times along the roads affected by the work. Sufficient lighting road signs, barricades and traffic diversion signs must be established along the sites of the works in accordance with the Traffic Police requirements and to the entire satisfaction of the Engineer.

The Contractor shall also comply with the conditions imposed by Traffic Police and Roads Opening Conditions and Requirements stipulated by BMC.

Upon completion of the work, the Contractor shall backfill and make good all disturbances to the road, side table, road kerb and drains to the satisfaction of the Road authorities and the Engineer.

The work shall be carried out at night time as far as possible to minimize the disturbance. If required, the Pits/trenches shall be covered with decking plates with appropriate support so that all traffic shall be allowed to run over the decking during day time. If directed by the authorities or the Engineer, the Contractor shall construct temporary diversions on the roads at his own cost to allow the traffic to flow through during the construction.

1.28 Road Re-instatement to Road Authority's Requirements

Wherever necessary the Contractor shall carry out the reinstatement of road foundation and road surface in accordance with the specifications and requirements of the Roads authorities. This shall include machine-paving as and when directed by the Engineer. If any authority demands any deposits or charges for reinstatement for road opening permissions, the contractors shall pay the same to such authorities directly. Such amount shall not be reimbursed by the Engineer under any circumstances.

Where road markings are affected, the Contractor shall reinstate it with thermoplastic (instead of paint) to the satisfaction of Roads authorities. The

Contractor shall include in his rates for compliance with all the conditions stipulated above.

1.29 Partial Covering up of Road in Busy Areas

Where it is necessary to open the road for access to sewer line, in busy roads, the top of the openings shall be covered by decking, if required by traffic authorities, leaving only the minimum required area open at the top to carry out work within the shaft. Vehicles shall be permitted to travel over such covers provided and hence must be designed and constructed accordingly. The Contractor shall submit to the Engineer, details of the partial covering. He shall allow for compliance of this requirement in his rates.

1.30 Reinstatement of Surface

The contractor shall be responsible for the reinstatement and maintenance of foundation and surface of roads, kerbs, footways and turfed areas, whether public or private, disturbed or damaged by any activities in connection with the work, and the prices quoted shall include such works.

The contractor shall allow for carrying out this reinstatement work in one or more stages, the maintenance of the reinstatement shall be to the satisfaction of the Engineer. This shall include the provision of temporary surfacing, its maintenance and subsequent breaking out and removal of temporary surfacing required for the reinstatement of final carriageways.

The contractor shall also make provision for any additional width in short lengths or in stages as considered required by the Engineer due to the Contractor's operations or to subsidence or traffic. The contractor shall carry out the reinstatement of road foundation and road surface in accordance with the specifications and requirements of the Roads Authorities.

This shall include machine-paving as and when directed by the Engineer. Where road markings are affected, the contractor shall reinstate it with thermoplastic to the satisfaction of Road Authorities. The contractor shall include in his rates for compliance with all the conditions stipulated above. In the event of the contractor failing to carry out maintenance work, the Engineer may get this work done as set out in the specification through any other contractor, in which case, the cost so incurred shall be borne by the contractor and deducted from money due or to become due to the contractor. The contractor shall also allow for matching paving in all reinstatement of road surfaces. The contractor must follow the safety rules as required. The contractor shall allow for all the above in his rates.

1.31 Permissions from municipal ward offices

The contractor shall be responsible for taking permissions of local municipal ward offices before commencing and carrying out work in their respective territorial jurisdiction, before setting up temporary office/chowky in the ward jurisdiction and also before taking trenches/pits on the road surface and for the like activities. Necessary letters seeking permissions will be issued by the department. However, obtaining permission by regular follow up with the ward staff shall be contractor's sole responsibility. Obtaining necessary permissions from other departments of BMC or any other organisation/authority shall also be contractor's responsibility.

1.32 Restriction on Working Hours

Generally, the Contractor shall be allowed to work only during the night hours in streets where the traffic is heavy. However, the works may be continued during busy hours during the day provided the Engineer shall allow him to authorize such work. Contractor is deemed to have included in his rates the cost of construction of all starting and ending pits required, if any. It must be clearly and definitely understood that the contractor shall be held solely responsible for making all necessary arrangement and co-coordinating with relevant authorities, competent agencies and obtaining their permissions in time to carry out the activities smoothly during the permitted working hours.

1.33 Night – Work

Contractor's attention is drawn to the prevailing situations on the sites which may require all the activities under the scope of the work to be carried out during the night hours only. All equipment used shall comply with the acceptable noise emission levels. In general it must be ensured that planned work for shift is completed within time and site cleared for allowing traffic or regular activities for every shift of work (night).

It is deemed that the rates offered by the Contractor have included everything required to comply with all the required provisions and any additional requirements as necessary to carry out the work during night hours.

1.34 Continuous Working

If, in the opinion of the Engineer it is necessary, by reason of the safety of the works, or the restoration of interrupted services or for any other reason whatsoever, the Contractor shall, when so ordered carry out the works or any portion thereof continuously by day and by night in a safe manner at no

additional cost to the BMC. All permissions needed in such cases shall be the Contractor's responsibility.

It shall be clearly and definitely understood by the Contractor that no claims in respect of any of the above shall be allowed in the settlement of the Final Account.

1.35 Effect of Approval and Acceptance of Proposals

Approval or acceptance by the Engineer of any proposal for executing the works, including drawings, specifications or resources employed under the Contract shall not relieve the Contractor of his responsibility for any errors thereon and shall not be regarded as an assumption of risk or liability by the Corporation. The Contractor shall have no claim whatsoever under the Contract on account of the failure or partial failure or inefficiency of any plan, method of work or equipment approved or accepted by the Engineer. Such approval or acceptance shall be considered to mean only that the Engineer had no objection to these proposals.

Notwithstanding any approval or acceptance by the Engineer, the Contractor shall remain fully responsible for completing the Works correct in every detail.

Schedule of submittals detailing the time when the documents are to be submitted is given below for the reference.

1.36 Reference Documents and Standards

The contractor shall execute the whole and every part of the work in most substantial and workmen like manner, both as regards to materials and otherwise in every respect in strict accordance with BMC specification latest edition, relevant WRc, WIS, ASTM, BIS, ISI, CPHEEO and other relevant specifications etc as may be specifically provided for.

2 Objective & Existing Site Details

2.1 Objective

Brihanmumbai Municipal Corporation has sewer network of about 2026 kms having various sizes of man-entry and non-man entry sewer lines.

In the present tender, BMC intends to undertake work of rehabilitation of 600 mm diameter to 900 mm diameter sewer lines with a structural standalone lining system by a suitable proven trenchless technology. Total length of sewer lines proposed to be rehabilitated under this project is **12,000 meters**.

The main objective of the tender is to increase the structural strength as well as flow carrying capacity, to improve the hydraulic performance, to increase abrasion & corrosion resistance and in turn to enhance the useful life of the sewers proposed for rehabilitation under this tender.

2.2 Existing Site Details

2.2.1 Details of Sewers Lines to be rehabilitated

There are around 20 different locations of the sewer lines proposed for rehabilitation under this project. The majority locations of the sewer lines proposed for rehabilitation are in City and Western suburbs area of Mumbai. However, few stretches either from Mumbai city or from Mumbai suburban area may be added to the scope of work.

Contractors are requested to refer to the Contract Drawings for tentative alignment and start and end points of the sewers proposed for rehabilitation.

The schedule of sewer lines included in the scope of work is as follows:

Sr. No.	Sewer Stretch / Location	Ward	Tentative Sewer Dia. (mm)	Tentative Sewer Length (Mtr.)	Tentative Manhole Depth (Mtr.)	
					Min.	Max.
1	Vakola Road (From Jn. Sundar Nagar Road No. 2 to Jn. Ch. Shivaji Maharaj Road)	H/E	600	1540	3.50	7.33
2	Achutrao Patwardhan Marg (A to B) (From Lokhandwala Circle to Platinum Height /Harley's Clinic)	K/W	600	560	4.90	6.80

Sr. No.	Sewer Stretch / Location	Ward	Tentative Sewer Dia. (mm)	Tentative Sewer Length (Mtr.)	Tentative Manhole Depth (Mtr.)	
					Min.	Max.
3	Achutrao Patwardhan Marg (B - C) (Wamanrao Mahadik Road to Jn. Jaiprakash Narayan Road)	K/W	600	650	5.80	7.20
4	S. V. Road (Jn. Sahakar Road to Patel Estate Road)	K/W	600	670	3.40	4.80
5	Harmindar Singh (From Aaram Nagar Corner to Wateshwar Mandir/JP road)	K/W	600	480	6.20	7.80
6	J. P. Road -2 (A-B) (From Janseva Sahakari Bank to Junction of Ceaser Road)	K/W	600	200	4.50	6.70
7	Senapati Bapat Marg (From Jn. Upendra Nagar to Dadar Pumping Station)	G/N	600	350	9.00	11.00
8	Chimbai Road (From Chimbai Road to Jn. Hill Road)	H/W	700	420	4.00	4.51
9	Subhash Road (Jn. Caves Road to Jn. Subhash Road)	K/E	700	180	4.20	6.10
10	J. P. Road -1 (A-B) (From Wateshwar Mandir to Sat-bangala Bus stop)	K/W	700	200	4.00	6.00
11	J. P. Road -1 (B-C) (From Sat-Bangala to Versova Ppg Station Near DN Nagar Metro Station)	K/W	750	1120	5.30	8.15
12	J. P. Road -2 (B-C) (From Junction of Ceaser Road to junction Box Near Versova Pumping)	K/W	750	950	4.70	8.90
13	Pandurang.Budhkar Marg (From Jn. G. M. Bhosale Marg to Globe Mill Pumping Station)	G/S	750	200	10.50	10.80
14	K L Walawalkar Marg (From Jn. Shaha Industrial Estate Road to Jn. Adheri Oshiwara Link Road)	K/W	800	300	6.90	8.65

Sr. No.	Sewer Stretch / Location	Ward	Tentative Sewer Dia. (mm)	Tentative Sewer Length (Mtr.)	Tentative Manhole Depth (Mtr.)	
					Min.	Max.
15	WEH Service Road (From Jn. Hanuman Road to Jn. Santacruz Station Road)	H/E	900	1970	5.50	7.40
16	Patel Estate Road (From Jn. Hazi Zahoor Qureshi Marg to Jn. S.V. Road)	K/W	900	280	4.40	6.30
17	Momin Gujarat Co.Op Soc (From Jn. Maulana Asad Madani Road to Jn. Hazi Zahoor Qureshi Marg)	K/W	900	520	2.95	5.90
18	Besant Road (From Jn. Vile Parle Station Road to Jn. Dashrathlal Joshi Road)	K/W	900	300	5.70	7.80
19	R. A. Kidwai Road (From Jn. of Sewree Cross to Jn. Road No. 26)	F/S	900	820	2.80	6.90
20	Ravaji Ganatra Marg (From Opp. India Post Office to Jn. Kalpak Road)	F/N	900	290	4.63	6.90
		Total		12000		

Total length of sewer lines to be rehabilitated under this project is 12,000 mtr.

Due to infrastructure works undertaken/to be undertaken by various authorities like Metro Rail, MMRDA, Redevelopment of B.D.D. chawl, replacement/ augmentation of sewer lines by SP/MSDP departments of B.M.C., few sewer lines (to the tune of 25%) may be deleted from the scope of the work and the quantities in B.O.Q. may thereby be reduced accordingly, without any obligation on B.M.C. to replace reduced quantities by alternate sewer stretches.

Further, by experience it is observed that there could be variations in the length of the sewer stretch and / or the size of the sewer line. The exact lengths and size under the scope of the work shall be ascertained by the Contractor after the de-silting, CCTV inspection and measurements of the sewer lines under the scope of the work. Any variation in diameter of the sewer line observed at site will be adjusted to the nearest BOQ size and the contractor will carry out the rehabilitation as per the actual size. The payment for the same shall be made according to the nearest BOQ size rate.

In case of saving in the scope of work and/ or if required, rehabilitation work of alternate sewer lines will be assigned to the contractor anywhere in BMC region within the contract cost with the sanction of the Engineer of the Contract and it will be binding on the contractor to carry out said additional work as per the quoted rates. Any claim on account of saving in the contract sum will not be entertained.

2.2.2 Material of Sewer Lines

Most of the sewer lines under the scope are of Concrete and or Vitrified Clay material.

2.2.3 Defects in Sewer Lines

The commonly found defects in the sewers lines includes -

- Displaced and open joints.
- Structurally deteriorated, broken pipes.
- Longitudinal and circumferential cracks and fractures.
- Hydrogen sulphide related corrosion in sewer which causes the sewer pipe to collapse.
- Debris, Obstructions, roots mass growth and Encrustations.
- Siltation caused by poor gradients (including reverse gradients, elevated sewer sections) & sunken sections of sewer.
- Infiltration through cracks and opened up joints which cause the surrounding soil to erode.
- Connections to storm water drain allowing silt and debris to flow into sewer during rain periods.

It shall not be construed that the above information describes adequately and accurately the actual conditions found in the sewers but provided herein only as a guide to the Contractor. BMC does not assume any responsibility for its accuracy or adequacy and it is up to the Contractor to fully explore the site conditions to get himself acquainted with the site conditions and nature of the work before submitting the bid documents. Ignorance of any nature and claims arising out of it will not be entertained at any cost.

3 Lining System Requirement

3.1 Liner Requirement

All the liners shall be designed as structural Type II standalone flexible liners in accordance with the design philosophy of WRC's Sewer Rehabilitation Manual.

The lining system shall be comprised of materials that are chemically and biologically resistant to internal exposure to sewage, sewage related gases and mild concentrations of industrial effluent for the entire service life of the lining.

In particular the system shall be chemically resistant to prolonged high concentrations of sulphuric acid (up to 10% concentration) resulting from the bacterial conversion of hydrogen sulphide. Linings shall not be susceptible to strain corrosion under deflection.

The lining material shall have satisfactory abrasion resistance to the migration of silt, sand and debris along the sewer. It shall be sufficiently robust not to be damaged by sewer cleaning equipment that may be required to remove silt or any future blockage following installation of the lining.

The lining system offered shall comply with following requirements -

- i) The liner must have sufficient strength to support all loadings during its life span.
- ii) The liner must seal the sewer to prevent the infiltration of ground water into the sewer and the ex filtration of sewage into the surrounding soil.
- iii) The liner shall be designed to withstand all construction loads including handling, lifting, and installation and grouting stresses without overstressing or cracking of the liner.
- iv) The liner shall have inert protective layers on the interior or exterior surfaces to meet technical requirements in the specification.
- v) The internal surface of the installed liner shall be smooth with Manning Coefficient of 0.09 or Colebrook White roughness of not more than 1.5 mm throughout its life span.
- vi) The liner/pipes manufactured shall be homogenous throughout and free from visible cracks, holes, foreign inclusions and other defects. It shall be uniform in colour, density, thickness and other dimensional properties.
- vii) The lining of the sewer shall be wrinkle free or free of distortions/irregularities and retain the grade and level of the existing sewer.

- viii) The internal surface of the liner at the joints shall be flush with adjoining pipes. Also, the gap between the socket and spigot of the adjoining pipes, if any, shall be uniform and shall be as per manufacturer's guidelines and/or relevant standard.
- ix) The joints shall be leak free and watertight and able to resist opening due to external or internal forces.
- x) Grouting holes, if any, shall be provided in the liner at appropriate locations, as approved by the Engineer.
- xi) The resins, felt material, if used, in manufacture of liner, shall be of approved standard and quality.
- xii) The Standard Dimension Ratio (SDR) shall be chosen in such a way that the resulting thickness of pipe shall meet the design calculation as a standalone type II pipe.
- xiii) Material colour shall be white, black or whatever is specified on the outside for ultraviolet protection with interior of pipe having a light reflective colour to allow easier/better viewing for television inspection.

3.2 Alternative Rehabilitation Methods

The bidder shall offer only one trenchless rehabilitation method / technology for rehabilitation of all the stretches of sewer lines included in this project.

Offering of different rehabilitation technologies/methods for different sewer stretches or for group of sewer stretches is not acceptable and such offers are liable for outright rejection.

3.3 Liner / Pipe Products

The Contractor shall submit with the bid (Technical Schedules) adequate data, test reports from reputed laboratories, proven track record, technical publications, comments and recommendations, if any, made on the use of the structural lining system by sewerage authorities, professional bodies or WRC or any similar association.

The Contractor shall supply the Engineer with full technical details of chemical composition of the pipes, recommended usage, life, mechanical properties and chemical resistance of the proposed liners /pipes.

3.4 Deliverables

Technology offered by the bidder shall meet the following deliverables, failing which the offer shall be treated as non-responsive and the corresponding price packet will not be opened.

Sr. No.	Deliverables	Acceptance criteria
1	Rehabilitation Technology	Shall be trenchless with minimum pits to be taken on roads and shall not be intensively dependant on soil investigation / geological survey of soil and shall be able to deliver output under Mumbai soil condition.
2	Liner offered	Shall be Structural, Standalone Type II liner to withstand combined hydrostatic load, soil load and traffic load in its own right without requiring any structural contribution from parent sewer and shall have ability to resist corrosion in the sewer atmosphere. (Documentary evidence from any recognized organisation / institution like WRC, I.I.T., V.J.T.I., recognized Engineering institutions substantiating above shall be uploaded along with bid.)
3	Minimum required life of installed liners.	Minimum 30 years.
4	Reduction in cross sectional area after rehabilitation	Not more than 15%
5	Increase in Hydraulic Capacity after Rehabilitation	At least 15%
6	Relative weight loss of liner material with reference to data given in WRc manual.	Shall not be more than 10
7	Factor of safety	Shall be 2 for design against pipe stiffness and shall be 2.5 for design check against buckling.

Note: Reduction in Cross sectional area and increase in flow capacity shall be evaluated on the basis of theoretical and empirical formulae.

4 Execution of Work

The proposed sequence of execution of work is as follows-

- i) Preparatory works.
- ii) Temporary/ Permanent plugging of sewer line.
- iii) Taking trenches for diversion of sewage flow.
- iv) Diversion of Sewage flow by pumping arrangement.
- v) De-silting and transportation of silt to dumping ground.
- vi) After de-silting CCTV survey.
- vii) Taking pits for accessing sewer lines.
- viii) Design, Manufacture, Supply & Deliver at site structural liner
- ix) Installation of structural liner
- x) Picking up and diversion of body connection to the nearest manhole
- xi) Manhole Repairs.
- xii) Construction of manholes, if required.
- xiii) After rehabilitation CCTV survey and commissioning of sewer line

The various operations / activities to be performed as per the above sequence are detailed as below.

4.1 Preparatory works

Preparatory works includes making arrangement of necessary safety equipments/ personnel protective gears, tools, tackles, implements, conducting preliminary survey of work site and identifying and locating manholes on the sewer line to be de-silted, making sketches, preparing AutoCAD/ GIS based drawings of sewer line showing thereon manholes, adjacent sewer/storm water network, arrangement of diversion of sewage flow, making locations for taking trenches and pits, etc., and preparation and submission of methodology, sewage flow diversion plans, etc. for approval of the Engineer and obtaining permissions from various authorities like ward offices, traffic police department, etc.

This begins with mobilising necessary safety equipments, personal protective gears, tools, tackles, road signs, traffic diversion equipments, manpower, machinery, etc.

The preliminary survey of work site shall then start. In general, most of the roads have storm water and sewer manholes laid along the lengths. It is therefore necessary to locate at site the exact manholes of sewer lines and storm water drains while starting the work. Hence, prior to actual start of work, it is required to carry out detailed survey of the sewer lines in order to

understand how the sewer lines are laid and to know correct locations of the sewer manholes.

After preliminary survey, sketches and AutoCAD / GIS based drawings of the sewer line shall be prepared showing thereon locations of manholes, adjacent sewer/storm water network, arrangement of isolation of sewer line, diversion of sewage flow, proposed locations of trenches and pits, etc.

The contractor shall obtain necessary permissions from various Authorities, Municipal Ward Offices as and when required. BMC shall provide necessary help and issue request letters seeking necessary permissions / approvals from various authorities for carrying out the work, however, following up with the various departments and obtaining required permissions / approvals shall be solely the contractor's responsibility.

The contractor shall prepare and make necessary submittals such as methodology, sewage flow diversion plans, traffic management plan, safety management plan, etc. for approval of the Engineer.

4.2 Temporary plugging of sewer line by construction of coffer dam.

This includes temporary plugging of sewer line / laterals by constructing a coffer dam of gunny bags / puddle bags in the manhole with safety precautions and in environment friendly manner.

The coffer dams of gunny bags are constructed on the sewer line / laterals to facilitate construction of permanent brick wall pardi on the sewer line to be isolated and for the diversion of flow from laterals.

The Gunny bags shall be securely held in position to prevent sliding downwards in the manhole. The coffer dam shall withstand the hydrostatic back pressure likely to be encountered and thus retain the force of waste water.

After completion of the work, the coffer dam shall be completely removed from the manhole and sewer line.

4.3 Permanent plugging of sewer line by construction of brick wall pardi

This includes permanent plugging of sewer line by constructing brick wall pardi in the sewer line with safety precautions and in environment friendly manner.

Immediately after construction of coffer dam, the Contractor shall construct a permanent brick wall pardi at both ends of the sewer line to isolate it permanently for carrying out further activities of the work under scope. The

contractor shall also plug all the intermediate body connections, branch connections, laterals in the manholes and any extraneous connection as necessary using appropriate plugging arrangements like mechanical seals / pneumatic plugs, etc.

The plugs shall be securely held in position to prevent sliding and any consequential mishap/accident. The plugs shall withstand the hydrostatic back pressure likely to be encountered and thus retain the force of waste water. The plugs shall be inflated and deflated within the sewer line itself by suitable controls from the road level.

The Contractor may provide secured plugging arrangement/ stanching in the brick wall pardi for release of excess pressure in regulated manner in case need arises. The safety officer shall check the plugs and stanching for safety every time during execution of work.

The brick wall pardi including stanching arrangements, plugs shall be completely removed after the work is completed.

In case of delay in execution of work as per schedule on a sewer stretch, if there is requirement of removal and reconstruction of temporary/ permanent pardi for any reason for the stretch under execution, the contractor shall reconstruct the same at his own cost without any cost implication.

4.4 Taking trenches for diversion of sewage flow

This includes excavation of required size trenches on road for laying sewage flow by-pass pipes including removing, stacking excavated material at site and transporting excavated material to the designated dumping spots including handling and supporting utilities/ drains/ cables/ water mains, etc, payment of any royalty, tax, etc. to any authority, laying sewage flow by-pass pipes and removing after completion of work flow by-pass pipes and backfilling the trenches including making good of the damaged manholes/ sewer lines/ other utilities wherever necessary and reinstatement of road surface as per guidelines/ standards/ norms of roads department of BMC complete all with safety precautions as per specification and as directed.

If trenches are required to be taken for the purpose of laying pipes for diversion of sewage flow to the nearby drain, the same shall be detailed out in the flow diversion plan submitted for the approval of the Engineer of the contract.

4.5 Diversion of Sewage flow by pumping arrangement

This includes diversion of flows by pumping and/or bypassing to maintain the

downstream / upstream sewerage system functioning normal without any surcharge, etc. during the work all with safety precautions and in environment friendly manner.

The contractor shall submit the flow diversion proposal to the Engineer for approval. The proposal shall include details of plugging/ blocking of sewers and diversion arrangement either by pumping of upstream flows or by diverting the flows through nearby sewer / storm water drains.

The Contractor is deemed to have inspected the site and ascertained himself about the availability of such bypassing opportunities in the vicinity of the sewer lines to be rehabilitated before pricing the Contract. He shall include all the expenses for controlling the flow during the work whether the sewer / storm water drains are available or not.

Notwithstanding the possibility of bypassing the sewage flows through the nearby sewer/storm water drains, the Contractor is deemed to have included in his prices for alternative diversions/ bypass pumping, etc in the event such facility is neither available nor practical to use on site. The capacity & quantity requirement of pumps shall be calculated on the basis of flow pattern and flow quantity for each area and the same shall be submitted to the Engineer's approval along with the flow diversion plan.

The Contractor shall ensure that the sewerage system is kept in normal operations by providing bypass arrangements or over pumping arrangements using appropriate equipments, pumps, etc. Care shall be taken to prevent any flooding / ponding due to sewage overflows / pumping. The Contractor shall take all measures necessary to prevent pollution of any water source, land as the entity is solely and wholly responsible for compliance with the requirements under pollution control Act and any other statutory provision.

The bypass pumping/flow diversion arrangement shall be continuously monitored and cleaned or cleared off any obstructions due to the silt. The contractor shall ensure that there is no overflow of sewage.

Approval of the Contractors proposals by the Engineer shall not relieve the Contractor of his responsibility to ensure that sufficient and adequate pumping arrangements are provided at all time and for all flows.

The Contractor shall in addition to all the foregoing requirements of this Clause also allow in his rates for the provision for:

1. Operation and maintenance, including establishment and removal, noise suppression of all over pumping plant
2. Operation and maintenance of all delivery hose installed, including establishment and removal and for the period during which by pass pumping work is required
3. Placing horizontal and/ or ramped metal plating over temporary diversion of the delivery hose either in trench or on the road surface and for routing delivery hoses through other conduits
4. Stanching and plugging lateral connections as well as other relevant requirements of the Engineer.

4.6 De-silting and transportation of silt to dumping ground.

This includes loosening, de-silting and thoroughly cleaning invert-lying debris and remove larger debris and objects such as bricks, etc, bacteriological slimes, roots, soft encrustations, grease, carbonated deposits, etc from the sewer line and manholes of any size, shape and up to any depth using any machine, temporarily stacking the de-silted material at site, sprinkling with approved disinfectant on the stacked silt to avoid nuisance of pests and bad odour and transporting the de-silted material to the identified dumping site including, loading, unloading, etc. complete all with safety precautions and in environment friendly manner as per specifications and as directed.

4.6.1 De-silting

De-silting immediately prior to sewer rehabilitation shall include all operations necessary to remove all silt, heavy grease, deposits of silt, cement grout, other debris and high levels of infiltration that the contractor can expect to encounter in the sewerage network without causing any structural disturbance to the body of the sewer and dispose it off in an environmentally acceptable manner at approved disposal grounds. The contractor shall submit the methodology of de-silting by any means for the approval of the Engineer.

The Engineer, if not satisfied with the level of cleaning of sewer line may ask the contractor to de-silt the sewer line or clean the sewer line again for satisfactorily carrying out the work.

Notwithstanding the approval of the Engineer, the Contractor shall ensure that the equipment adopted shall be effective in cleaning sewers as specified without causing or precipitating (further) structural damage including collapse. Where the sewer is suspected to be in poor structural condition, the contractor shall

ensure that cleaning operations cause no damage to the sewers at these locations.

All silt, grease and loose material removed from the sewer line and manholes shall be temporarily stored at site for drying in environment friendly manner and shall be stored temporarily in suitable size containers for draining out water from the silt and drying of silt. Silt shall be kept covered and a suitable insecticide shall be sprayed on it to avoid nuisance of mosquitoes and pests.

Upon drying, the silt shall be immediately lifted from the site and transported to the designated place in an environmentally acceptable and safe manner.

All the risk and cost associated with safe disposal of the material taken out of the sewer shall be borne by the Contractor and nothing extra will be paid on this account in any circumstances.

4.6.2 Transportation of silt to the dumping ground

It shall be responsibility of the contractor to remove, transport and dispose off the dried silt to the dumping ground proposed by the contractor and approved by the Engineer. All the vehicles used for transportation of silt shall be fitted with Vehicle Tracking System (VTS). The procedure to be followed for dumping the silt is as under.

Before commencing de-silting operation, the contractor shall identify and propose dumping ground for accepting silt and submit a complete proposal including consent of the concerned owner / authority of the dumping ground to accept silt, capacity of the dumping site, detail silt management plan, methodology for transportation and disposal of silt in safe and environment friendly manner, mode of disposal of silt at the proposed dumping site during the contract period, etc. for the approval of the Engineer of the Contract. The vehicles engaged for transportation of silt shall comply requisite RTO and BMC norms.

The contractor shall pay all the charges incidental to the removal, transportation and dumping of the silt to the dumping ground including silt levelling /tipping charges which may be levied by the said dumping ground per trip of the silt dumper or at lump sum, as the case may be. A challan will be issued by the site engineer of BMC for each and every trip of dumper and the same shall be got acknowledged by the dumping ground authorities by the contractor. A copy of such acknowledged challan and VTS Report shall be submitted back for record to the site engineer of BMC. The contractor shall allow for all these costs in his rates. No extra payment on this account shall be admissible to the contractor.

4.7 After de-silting CCTV survey

Colour CCTV Survey using High Definition CCTV equipment having pan, tilt and zoom facility including inspection of laterals and defects and provision of DVDs / Reports, etc. all with safety precautions and in environment friendly manner as per specifications and as directed.

4.7.1 General

The contractor shall carry out colour CCTV survey of each sewer line twice under this project, firstly, immediately after carrying out thorough de-silting of sewer line and secondly after rehabilitation of sewer line. The CCTV survey in each case shall be carried out as follows:

Before starting of the CCTV survey, the sewer line shall be cleaned satisfactorily so as to give clear view to CCTV camera head.

The CCTV survey shall be carried out in professional manner with a self propelled camera having pan, tilt, zoom and auto measurement facility. All defects shall be recorded properly showing the exact meterage at which the defect exists and the date and time of recording, etc.

CCTV survey shall be carried out within three (3) days of cleaning. If CCTV survey works are delayed for a period in excess of three (3) days after cleaning, the sewer shall be re-cleaned, unless instructed otherwise by the Engineer. All costs associated with re-cleaning shall be borne by the Contractor.

The Colour CCTV inspection footages on a VCD/DVD and written reports in approved formats together with colour photographs of the host (existing) sewer shall be submitted to the Engineer.

CCTV video recordings shall be made from manhole to manhole. At every new manhole, the meter reading shall be set to zero. Interior of the manhole shall also be properly recorded during CCTV survey.

CCTV inspection will not be accepted when the height of water over the invert of sewer at the upstream manhole is more than 10% of internal diameter. In such cases the Contractor will have to take suitable measures for maintaining the water level below 10% of internal diameter.

4.7.2 Intent

The basic intent of the CCTV inspection is to carry out video recording of the internal condition of the sewer using remote controlled High Definition (HD)

CCTV camera and to assess the condition of sewer on the basis of defects encountered and then to grade the sewer in accordance with the structural and service grades as defined under the Sewer Rehabilitation Manual of WRC, UK and arrive at the exact nature of measures needed for rehabilitation.

The output of the CCTV shall be free from distortion and shall illustrate all defects clearly. When photograph is extracted from the CCTV footage to depict a lateral or a specific defect, it shall occupy the central part of the photograph and be clearly in focus and accurately reflect the lateral or defect.

4.7.3 Defects Abbreviation

The abbreviations to be used in the Contract for classifying various types of defects shall be in accordance with the approved abbreviations by the Engineer. The abbreviations are based on Manual of Sewer Condition Classification by UK Water Industry Engineering and Operation Committee. The defects abbreviations are given in the Table below for reference.

Code	Definition	Code	Definition
Structural Defects		Service Defects	
B(J)	Broken pipe (at Joint)	DE(J)	Debris (at Joint)
CC(J)	Crack Circumferential(at Joint)	DEG	Debris Grease
CL(J)	Crack Longitudinal (at Joint)	DES	Debris Silt
CM(J)	Crack Multiple (at Joint)	EL(J)	Encrustation Light(at Joint)
D(H/V)	Deformation (Horiz/Vert.)	EM(J)	Encrustation Medium (at Joint)
DB	Displaced Bricks	EH(J)	Encrustation Heavy(at Joint)
FC(J)	Fracture Circumferential (Joint)	ESL	Scale Light
FL(J)	Fracture Longitudinal(Joint)	ESM	Scale Medium
FM(J)	Fracture Multiple (at Joint)	ESH	Scale Heavy
H	Hole in sewer	ID(J)	Infiltration Dripper (at Joint)
JDS	Joint Displaced Slight	IG(J)	Infiltration Gusher (at Joint)
JDM	Joint Displaced Medium	IR(J)	Infiltration Runner (at Joint)
JDL	Joint Displaced Large	IS(J)	Infiltration Seeper (at joint)
MB	Missing Bricks	OB(J)	Obstruction (at Joint)
MM	Mortar Missing Medium	RF(J)	Roots Fine(at Joint)
MS	Mortar Missing Surface	RM(J)	Roots Mass (at Joint)
MT	Mortar Missing Total	RT(J)	Roots Tap (at Joint)
OJM	Open Joint Medium	V	Vermin
OJL	Open Joint Large		
SSS	Surface Damage, palling Slight		
SSM	Surface Damage Spalling Med.		
SSL	Surface Damage, Spalling Large		
SWS	Surface Damage, Wear Slight		
SWM	Surface Damage, Wear Medium		
SWL	Surface Damage, Wear Large		
X	Sewer Collapsed		

4.7.4 CCTV Camera Speed

The speed of the CCTV camera in the sewer shall be limited to 9 to 12 m per minute or such other speed as agreed by the Engineer to enable all details to be extracted from the CCTV recording.

4.7.5 Variable Scan Camera

The Contractor shall provide colour pan and tilt camera(s) with zoom lens to facilitate the survey and inspection of all laterals, as well as other features, including defects such as hydrogen sulphide corrosion, missing or dislodged bricks, etc. in the overt of sewers and benching or walls of manholes. These will be carried out as part of the normal CCTV assessment as the survey or inspection proceeds when approved by the Engineer. A 360° rotational scan indicating general condition must be implemented at every 10 metre interval (min.) along sewers and at any salient defect features. The tilt arc shall not be less than 225° unless otherwise agreed.

The variable scan camera and colour monitor shall include screen graphics clearly indicating the directional location of the field of view of the sewer at any selected position relative to the cameras rotational and tilting arc. Zoom images shall similarly include reference to 'zoom' lens usage.

4.7.6 Linear Measurement

The CCTV monitor display shall incorporate an automatically updated record in metres up to two decimal fractions. The accuracy of linear measurement shall be 1% or 0.3 m whichever is less.

The Contractor shall demonstrate that the tolerance in the above Sub-clause is being complied with using one or both of the following methods in conjunction with a linear measurement audit form which shall be completed each day during the Survey:

- Use of a cable calibration device;
- Tape measurement of the surface between manholes.

If the Contractor fails to meet the required standard of accuracy the Engineer shall instruct the Contractor to provide a new device to measure the chainage. The Engineer may at his discretion instruct the Contractor in writing, to re-survey those lengths of sewer first inspected with the original measuring device using the new measuring device.

4.7.7 Data Display, Recording and Start of Survey/Inspection

At the start of each manhole length a data generator shall electronically generate and clearly display on the viewing monitor and recording a record of data in alpha-numeric form containing the following minimum information:

- Automatic update of the camera's chainage position in the sewer line from adjusted zero.
- Sewer dimensions
- Manhole/ pipe length reference numbers
- Date of survey
- Road name/location
- Direction of Survey
- Time of start of Survey

The size and position of the data display shall be such as not to interfere with the main subject of the picture.

Once the survey of the pipeline is under way, the following information shall be continually displayed:

- Automatic update of the camera's chainage position in the sewer line from adjusted zero.
- Manhole/ pipe length reference numbers
- Date of survey
- Time of start of Survey

4.7.8 Reverse Gradient

The contractor shall take invert levels of all manholes after de-silting and assess if any reverse gradient exists with respect to the ILs of consecutive manholes and shall clearly mark the said stretch(s) on topographical survey /GIS drawings and submittals in a method as approved by the Engineer.

4.7.9 Report Format

The contractor may use the Typical CCTV Survey Report Format accompanied as Annexure-I for submitting CCTV inspection report in hard copies. This shall be accompanied by DVDs for the inspection footage covered.

4.8 Taking pits for accessing sewer lines.

This includes, excavation of required size pits to access sewer line including shoring, levelling, dewatering, barricading and removing, stacking excavated material at site and transporting excavated material to the designated dumping spots including handling and supporting utilities/drains/cables/water mains, etc, payment of any royalty, tax, etc. to any authority and backfilling the pits/shafts/trenches after completion of rehabilitation work including making good of the damaged manholes/sewer lines/other utilities and reinstatement of road surface as per guidelines/standards /norms of roads department of BMC complete all with safety precautions.

This item is provided in the Bills of Quantities for excavation of pits/shafts for accessing sewer line at the points of suspected collapse, settlement of joints and such other situations requiring access to sewer line. Considering the same, bidders shall quote separate rate on number basis for taking access pits on roads.

4.9 Design, manufacture, supply, deliver at site structural liner

This includes, Design, manufacture, supply, deliver at site structural lining system all with safety precautions and in environment friendly manner for the sewer lines to be rehabilitated.

4.9.1 Structural Design of Liners/Pipes

4.9.1.1 General

A detailed design proposal for each rehabilitation section shall be submitted with the Bidding document.

All linings shall be designed as structural Type II Standalone liners and the linings shall be designed to withstand all external loadings including groundwater, soil loading and traffic loading. The basis of design shall be according to WRc / WAA Sewer Rehabilitation Manual, latest edition or equivalent ASTM or British standards or as per guidelines provided in CPHEEO manual.

Notwithstanding the design calculations submitted by the Contractor together with his bid, the Contractor shall submit final design calculations for each stretch of sewer road wise and size wise together with his installation method statement to the Engineer for approval prior to the commencement of lining work on site which shall take all findings like CCTV inspection, measurements,

ground conditions etc in account. Approval of the calculations will not relieve the Contractor of any of his obligations under the Contract.

Unless noted otherwise, all calculations shall assume a minimum factor of safety of 2 and a minimum factor of safety of 2.5 shall be assumed for buckling. The Contractor shall, in addition, include design check calculations based on structural design procedure included in the specifications.

4.9.1.2 Dimension Checking

This includes, dimensional check using Laser equipment or custom made templates of various sizes through the sewer stretch of any size in order to decide the clear and best fit internal diameter of the parent sewer due to undulations, displacements at joints, ovality, etc., all with safety precautions and in environment friendly manner.

Dimension checking shall include the measurement of changes in horizontal and vertical alignment at changes in direction and bends where they occur between bends.

Prior to the manufacture of any structural lining segments, details shall be provided to the Engineer showing the results of the internal measurements and the chosen resultant selection of dimensions of the lining. Additional information shall be provided to demonstrate the fit of the structural lining segments at bends.

4.9.1.3 Design Responsibility

The Contractor shall be solely and wholly responsible for the suitability and correctness of design calculations necessary to substantiate that the structural lining system will be suitable in the long term for loads and conditions experienced by the lining.

The design requirements set down in this specification shall be considered as minimum requirements. The Contractor may adopt more conservative assumptions or design methods should they consider it necessary to accept full design responsibility.

Review of the Contractor's design calculations shall not be construed as acceptance of the calculations. Responsibility of the design shall remain with the Contractor.

Along with the tender in Packet 'A' and 'B' by all bidders:

The design of liner shall be carried out and approved by professional recognized organization / institution like WRC, I.I.T., VJTI, Experts from the Recognized Engineering Institutions or by Chartered Engineer having particular experience in liner design and structural assessment of sewers of similar nature and complexity to the project

At the time of execution by the successful bidder:

The design of liner shall be carried out and approved by professional recognized organization / institution like WRC, I.I.T., VJTI, Experts from the Recognized Engineering Institutions having particular experience in liner design and structural assessment of sewers of similar nature and complexity to the project.

In case any vetted and approved design calculations are fitting for other sewer stretch/stretches, re-vetting of design calculations for that sewer stretch/stretches is not necessary, however, all the design data and design calculations shall be submitted for verification and approval before supply and installation of liner.

4.9.1.4 Design Life

The service life of the installed lining system shall be not less than thirty (30) years under live sewer conditions. The Contractor must produce documentary evidence to substantiate that the system he offered shall have minimum thirty (30) years of service life.

4.9.1.5 Material Properties for Design

Where material properties under load vary with time, material properties of the lining at the end of the service life specified shall be used in design calculations. The exception to this is design of the lining for loads applied only during installation, which may be based on short term material properties.

The material properties used in the design shall be consistent with the composition of the lining material. Values for material properties may be nominated by the Contractor but must be capable of being substantiated by test data based on representative samples of the installed lining material. The Contractor shall make provision in the Contract for such tests to be conducted during installation.

4.9.1.6 Short and Long Term Engineering Properties

The Contractor shall state the short term and long term engineering properties including the stiffness values adopted for the materials in the design and submit

documents to support the values of short term and long term engineering properties including stiffness assumed.

The Contractor shall make provision in his prices to conduct tests on site as well as in laboratories duly authorized for this purpose by the BMC to prove that the materials and as installed liner actually used on site have achieved the short term and long term values assumed in the design.

4.9.1.7 Stiffness Consistency

The stiffness consistency of the as-installed liners shall be checked to ensure uniformity along the length of the rehabilitated sewer. Contractor shall make provision in his prices to determine the actual thickness of the liner and the engineering properties of the liner materials at manufacturer's works or at approved testing laboratory. Such test shall be carried out for each sewer size as per IS or any other relevant international standard.

4.9.1.8 Bending Radius

The Contractor shall clearly understand the difficulties of some of the liners achieving a good fit to the invert of smaller size sewers due to difficulties in bending the liners, especially the thicker liners. The Contractor shall study the situation and confirm the capability of the proposed liners to achieve the required bending radius without cracking or splitting for ease of installation.

4.9.1.9 Strain Corrosion Design Requirement

Strain related corrosion in polymeric materials in sewage environment has been a source of structural capacity degradation. The Contractor shall address the issue of strain related corrosion for the materials he proposes to use and shall submit his recommended design practice and the standard for Engineer's perusal and acceptance. The Contractor shall consider restricting the strain to minimum recommended values in the design codes or Indian or British or ASTM standards as accepted by the Engineer for materials known to be prone to strain related corrosion in sewage environment. A more stringent strain limitation would be about 0.5%.

4.9.1.10 Deflections

The contractor shall ensure that ultimate deflections are within the acceptable limits as mentioned in the relevant standard and show in his design that deflection issues have been adequately taken into consideration in determination of the liner thicknesses.

4.9.1.11 Design Loads and Soil Parameters

Design loads shall comprise the maximum load produced from the combination of earth pressures, hydrostatic loads and traffic surcharge loads for each particular lining.

Vertical earth pressures shall comprise the nominated effective overburden height of soil above the pipe without reductions for trench effects.

Maximum hydrostatic pressures from groundwater shall be determined assuming the water table is located at surface level.

Traffic surcharge loads shall be calculated in accordance with Indian Road Congress AA Class Loading standard. Loads shall vary depending on the road usage as follows:

TYPE A Main Road Multiple adjacent lanes of Standard T44 or Standard W7 wheel loads.

TYPE B Light Road Single lane of Standard T44 or Standard W7 wheel loads.

TYPE C Field Load 60 per cent of light road loading.

Design depths from surface level to invert level, and the type of traffic load used for design of the lining, are given in this specification.

Traffic live and soils loads given in WRC SRM or AASTHO HS20 loadings of latest Edition are acceptable.

All design calculations required as per the specification shall be supplied with the bid (Technical Schedules). Notwithstanding the designs submitted along with the bid, the successful bidder (the Contractor) shall validate the designs as per the actual parametric values at site.

Following values shall be used for design purpose of the liners-

- a) Minimum Ovality of the existing pipe shall be taken as 2%.
- b) Soil Modulus shall be considered as 6.0 MPa.
- c) Soil Unit Weight shall be considered as 20 KN/m³.
- d) Existing host pipe with fully deteriorated pipe condition and Manning coefficient 0.013

4.9.1.12 Installation Design Checks

Linings shall be checked to ensure that they are stable and will not be overstressed for any intermediate states during the installation of the particular

system. These checks may be based on short term properties of the lining material.

4.9.1.13 Definition of Pipe Condition

For the purpose of this specification and for design purposes, the condition of the existing sewer body shall be considered as Fully Deteriorated.

Fully Deteriorated: The sewer body has lost a sufficient degree of its original structural capacity that it cannot be relied upon to support applied loads for the next 50 years. The structural lining is expected to act as a structural replacement for the original sewer to bear the full load from the ground, traffic and ground water.

4.9.1.14 Design Calculations

a) Hydraulic:

The design shall be based on the buckling strength of the lining with account taken of the enhancement provided against a buckling mode of failure by the existing pipe

Design thickness shall be sufficient to withstand the hydrostatic pressure due to groundwater without collapsing

b) Structural Standalone:

The lining shall ignore any contribution from the original conduit and be designed to support all imposed loads in its own right.

The lining shall be designed to satisfy the critical performance criteria of vertical deflection, strength, and buckling under maximum combined loads

c) Check for Flexural Strain

The long term flexural strain developed in the wall of the lining for any load or load combination shall not exceed the permissible value appropriate for the lining material.

d) Check for Buckling Resistance

The lining shall be designed so that its buckling resistance is sufficient to support the imposed loads.

Calculations shall also be provided to demonstrate that the existing structure will not be overstressed by any combination of applied loading or reactions from the installation or performance of the lining.

4.9.1.15 Liner Thickness

The minimum structural liner thickness to satisfy combined hydrostatic, soil and traffic loading shall be arrived at through the process of design calculations and design checks to be carried out and approved by professions organizations / institutions as mentioned in the specifications. The bidder shall supply design calculations for each stretch of sewer line along with the bid. A detailed design check will be conducted by the Engineer during the execution of work.

The Contractor shall note that the acceptance of his bid and award of the Contract by the Employer will not in any way be considered as acceptance of the thicknesses proposed in the bid. The Contractor shall clearly understand that if the structural design thicknesses found to be inadequate during the detailed checking of design, he shall be held solely and fully responsible to rectify and adjust the thickness without any variation to the Contract price and to the compliance requirements of the contract conditions. In case, the contractor fails to comply with this requirement, the Engineer reserves the right to reject the proposal altogether at the risk and cost of the contractor and without incurring any liability on the part of the Employer.

4.9.1.16 Surface Roughness Value

The improved surface roughness associated with the polymeric and plastic materials of the liners has a considerable impact on the hydraulic capacity of the renovated sewer when it is new. However with ageing of the renovated sewer, the roughness values tend to be higher due to slime formation and accumulation of silt at the invert. From the point of view of slime formation and localized accumulation of silt in the renovated sewer, the roughness value to be adopted for the purpose of this specification is limited to Manning Coefficient = 0.009 or Colebrook White Roughness (K_s) = 1.5 mm for computing the hydraulic flow capacity of sewers lined with all types of polymeric and plastic materials.

4.9.1.17 Permitted Maximum Reduction in Cross Section

The structural liners must retain the largest possible internal diameters/ dimensions. The reduction in the physical cross sectional area of the existing sewer lines after the rehabilitation shall be allowed as specified in deliverables of the tender. The said requirement is mandatory and any offer exceeding the

maximum permitted reduction in cross sectional area will be summarily rejected.

The reduction in cross sectional area of existing sewer lines after rehabilitation shall be exclusively in terms of physical dimensions. The Contractor shall support the quoted percentage reduction in cross sectional area by submitting detailed calculations with the bid (Technical Schedule). The improvement in hydraulic capacity shall not be taken into account for calculating cross sectional area reduction.

If the percentage of cross sectional area reduction exceeds offered value during execution, the work will be rejected outright.

Any such rejected work shall be rectified by the contractor at his own cost and shall bring the reduction in the cross sectional area within offered value.

At tender stage, nominal diameter of the sewer shall be used for calculating percentage area reduction. At the execution stage, actual internal diameter of the sewer line measured using laser equipment and by passing custom made template to account for undulations due to displaced joints, ovality, etc. shall be used as best fit internal diameter for calculation of percentage area reduction

4.9.1.18 Method Involving Internal Loading

The structural capacity of the existing sewer is unknown. Any method involving internal loading on to the sewer body during the construction operation will be viewed cautiously.

4.9.1.19 Method involving Reaming or Grinding

If reaming or grinding or mechanical scrapping of the internal surface of the sewer body is proposed by the Contractor to upsize, or minimise the loss of cross sectional area, or regularise (and standardise) the shape and size of the sewer during the construction operation, the Contractor shall carryout a structural assessment of the existing sewer and necessary temporary structural enhancement to the sewer body, such as grouting the voids, if present behind the sewer body, filling up of any missing mortar and make the sewer body temporarily fit to sustain such temporary loadings arising from the proposed construction process. The contractor shall submit the details of the structural enhancement measures he proposes to carryout for the Engineer's approval and submit calculations and test result to prove that the proposed construction process involving grinding or reaming operation is safe and the integrity of the existing sewer body is intact. All the cost associated with structural assessment,

certification by the rehabilitation engineer and safety of the sewer shall be borne by the Contractor.

4.9.2 Manufacturing & Procurement of the Liner

- i) The manufacture of the lining shall be carried out in accordance with a specification purpose written for the particular system. The specification shall include reference to appropriate standards for the manufacture.
- ii) The propose written specification shall include testing and inspection work to be carried to verify the dimensions and quality of the manufactured lining at the manufacturing unit. Manufacturer's test report shall be submitted for verification and approval to the Engineer before delivery of the supply.
- iii) The bidder shall either have their own manufacturing unit or have assurance from the other manufacturing unit consenting that they shall supply the necessary quantity of required pipes to the bidder as and when required under the contract. The authority letter from such other manufacturing unit shall be procured by the bidder and appended along with the bid.
- iv) The bidders are expected to carry out detailed study before finalising the material sources which would timely and uninterruptedly supply the required material for lining throughout the contract duration. However in case of extreme, unavoidable circumstances and force major conditions, the Engineer of Contract may grant permission to change the source of material(s) only once throughout the contract duration with proper justification and documentary evidence. The bidder shall ensure that properties of new materials should be equivalent or better than the earlier material and should meet the deliverables of the tender.

4.9.3 Testing

- i) The manufacturer shall conduct all relevant tests on the product at its works as per the relevant standards. Test reports endorsed by the test laboratory shall be provided to the BMC Engineer.
- ii) All field tests shall be got done by the contractors. All other type and routine test shall be carried out by the bidder at their manufacturing unit or in a testing laboratory or institution approved by the Engineer.
- iii) All costs towards tests shall be borne by the contractor.

- iv) A project specific Quality Control System, shall be also developed during the execution of works for site verification, manufacturing and installation of the liner.
- v) Test data shall be provided prior to manufacture of any linings to confirm minimum material properties as per specification requirements.

4.9.4 Transportation of material / liner

- i) The Contractor shall transport, handle and store the liners / pipes and fittings as recommended by the manufacturer and as per relevant standard requirement and a specification purpose written for the particular pipe system
- ii) It shall be noted by the Contractor that transport of the materials of construction overland will be subject to co-ordination/ regulation of transport during peak hour traffic in the city/suburbs. The Contractor's rates shall include for all costs arising from the imposition of traffic hour's restriction by the Traffic Police.

The Contractor shall decide when to transport the material to the site and when to commence installation with regard to weather conditions and traffic situation. If the pipe/liner material is required to be transported under controlled temperature and conditions then the contractor shall do it without any extra cost and accordingly plan their activities during night hours, if required.

- iii) The Pipe laying machines, Grouting machines & ancillary Equipments, Pipes and other materials shall be transported to site as per the programme. The Contractor shall decide when to transport the machines, equipments and other materials to the site and when to commence the installation with regard to weather conditions and traffic situation. The Contractor shall transport the machines, pipes etc to the site only after the completion of the CCTV survey done after the sewer desilting works and the approval of the design by Engineer. The Contractor shall take all the measures to ensure the proper placing of the machines and other equipments on site so as not to cause any hindrance to the public.

4.9.5 Delivery, Storage and Handling of Liner

- i) The Contractor shall place the order for liner as per designs duly approved by the Engineer. The manufacturing facility shall have the adequate capacity to manufacture and test the liners as per testing specifications.

The delivery and installation of the lining shall be carried out in accordance with a specification purpose written for the particular lining system.

- ii) The liner/pipes, fittings etc. shall be transported to the store and to site as per manufacturer's recommendations under controlled conditions. Pipes or fittings shall not be dropped from height. Care shall be taken during the transportation of the pipes such that it will not be cut, kinked or otherwise damaged. Pipes shall be stored on level ground, preferably turf or sand, free of sharp objects, which could damage the pipe. Stacking of the pipes shall be limited to a height that will not cause excessive deformation of the bottom layers of pipes under anticipated temperature conditions. Where necessary due to ground conditions, the pipe shall be stored on wooden sleepers, spaced suitably and of such width as not to allow deformation of the pipe at the point of contact with the sleeper or between supports.
- iii) Each Liner/Pipe shall be suitably marked on its surface at intervals not to exceed 2m to show manufacturer's name, production code, date of manufacture, minimum thickness and size or as per manufacturer's guidelines and as approved by the Engineer. The Contractor shall submit a Certificate of Compliance for each lot manufactured. Certificate of compliance must include a minimum of following details:
 - 1. Manufacturer details (including ISO certification details)
 - 2. Plant
 - 3. Date and place of manufacture
 - 4. Test Certificates and Material Safety Data Sheet (MSDS)

4.9.6 Reference Documents and Standards

The bidder shall refer to appropriate standards applicable to the lining system proposed by them. The design, manufacturing and delivery of the liner shall comply with ISO 9000 series (latest editions).

The Contractor shall furnish, in original, a full set of specifications and standards, referred to the methods, tests and other testing standard and procedure proposed to be adopted in the tests, for the use of the Engineers.

4.10 Installation of structural liner

This includes installation of structural lining system and making good of end portions of rehabilitated sewer & lateral connections, etc. and fill the annular space between the sewer walls and the liners with portland cement based grout or similar approved material to provide structural action consistent with

the assumptions made for the structural design and making good of rehabilitated sewer, sealing of the migration gap between the liner and the parent sewer at manholes all with safety precautions and in environment friendly manner.

It is expected that the lining work has to be performed from the existing manhole openings, without needing much excavation to be made on the road surface. In case any excavation is required to be made, the bidder, in his proposal and method statement, must clearly mention the requirement of pits/trenches, breaking of any portion of existing manholes/chambers, etc. either for accessing sewer line or for diversion of flow or for diversion of body connection to the nearest manhole.

Details of proposed alterations shall be submitted to the Engineer for approval before such alterations are made. No alterations shall be carried out until the proposals have been approved by the Engineer. All manhole alterations shall be made good following the completion of the lining. The cost of all manhole alterations and reinstatement necessary to facilitate all lining work is deemed to be included in the Contractor's rates of item for manhole repairs and no extra claim shall be entertained by the Corporation. For excavation of pits and their reinstatement, separate items are provided in the Bills of Quantities.

Before starting the installation, the Contractor shall submit all the relevant details related to particular lining system.

Linings shall be preferably installed in a continuous operation starting from upstream and progressing towards downstream side. All equipment, labour, materials, and processes required to complete the work must be ready on-site before installation begins. The installation area/equipment shall be securely protected and all damaged yards, driveways, walks, etc., shall be repaired at no cost to the Owner.

Abrupt irregularities including excessively rough surfaces, stepped joints, holes, etc shall be rectified/ removed prior to lining by filling with a cement render or epoxy mortar. Where the maximum aggregate projection from a cleaned concrete surface exceeds 5 mm, the surface shall be rendered to remove the projections.

The lining shall be sealed at its ends to prevent infiltration/ex-filtration using an epoxy mortar that is compatible with the lining and has a service life under similar conditions that is comparable with the lining material.

If the defective pipe/liner is discovered after it has been installed, it shall be removed and replaced with a sound liner/pipe in a satisfactory manner at no additional cost to the B.M.C.

Details shall be provided for the cutting and making good of the laterals and branches. Also to provide details of sealing grout holes and gap between pipe joints for Engineer's approval.

The Contractor shall provide the detailed methodology to tackle with unfavourable conditions that might be encountered during the installation of liners/pipes by Trenchless Technology. The contingency plan provided by the Contractor shall include details for tackling a minimum of following situations:

- (a) Expansive soils, Soil heaving or settlement
- (b) Ground movements during Lining method.
- (c) Concrete envelopment/encasement
- (d) Unforeseen Obstructions along the existing pipe length in form of completely collapsed pipe, big boulders, set concrete etc causing difficulties in installation of the liner.
- (e) Damage to the existing utilities and the replacement product's structural integrity and method of repair.
- (f) Adjacent pipes or utility lines those are very close to the pipe being rehabilitated.
- (g) Body connections, extended service disruptions.
- (h) Effect on the other underground structures.

4.10.1 Trial Section

The contractor as per the testing standards shall carry out a successful demonstration trial and procedure shall be agreed with the Engineer before commencing the trial.

The Contractor shall allow for any further requirement of the Engineer to modify his method or material subsequent to the trial, to complete the work satisfactorily. The Contractor shall include in his rates for complying with all the foregoing requirements of this Clause.

4.10.2 Finish (Hydraulic Acceptability)

The installed lining shall be continuous over its length and shall be free of any defect which is likely to affect the satisfactory hydraulic performance of the lined conduit or cause accumulation of solids.

4.11 Picking up and Diversion of body connection to the nearest manhole

This includes, picking up body connection and diverting it to the nearest manhole using 150 mm dia. Vitrified Clay Pipe including breaking into and making good the walls, floors of manhole with cement concrete, cement plastered on both sides and complete reinstatement of the road surface, footpath, pavement , etc. all with safety precautions and in environment friendly manner and as per the road reinstatement guidelines and as directed by the Engineer.

All the connections into the existing conduit and manhole shall be detected, identified and reinstated. The body connections to the sewer line, if any, shall be picked up and diverted to the nearest manhole by laying new vitrified clay or HDPE pipe of suitable diameter from its source to the nearest manhole. The contractor shall include everything required for plugging, isolation and temporary diversion of the existing body connection, providing, supplying, storing, jointing and laying of suitable diameter Vitrified Clay/HDPE pipe from property to the nearest manhole, making good all connections, establishing smooth flow of sewage from property to the manhole and the cost of proper sealing of the earlier discarded body connection, etc. all with safety precautions and as per specifications and as directed.

The edges of connections shall be made smooth. The cutting equipment shall leave a smooth, bevelled edge free of any protrusions so as not to inhibit the flow of sewage in the conduit. The cut out shall be finished with the inside surface of the conduit/manhole.

The Contractor is obliged to maintain in working condition the drainage facilities of properties connected through such connections. The connections shall be suitably sealed so as to provide watertight connections.

4.12 Manhole Repairs

Manhole Repairs includes plastering, grouting and sealing of leaks and haunch repair, etc. including replacement of broken frames and cover, raising of buried manholes up to ground level, taking manhole coordinates with the help of rovers provided by BMC and updating data at SUMC, etc. all with safety precautions and in environment friendly manner as per specifications and as directed.

A separate B.O.Q. item is provided for repairing all existing manholes on the sewer lines under the scope of the work. Before commencing the repairs, the contractor shall study the existing conditions of manholes and temporarily divert all connections coming into the manhole and stop infiltrations into the manhole.

All the grease, slime, vegetation, foreign body and all cement plaster in the walls of the manhole shall be removed and the walls shall be thoroughly cleaned before commencing any repair work. The silt, debris shall be carefully collected at the manhole and removed from the site of the work and disposed off in an environmentally acceptable manner at the disposal site (dumping ground) as per the procedure mentioned in the specification.

The missing bricks in the walls shall be replaced with new bricks in the cement mortar 1:4, for bedding and benching repair work 1:4:8 cement concrete shall be used as specified and/ or as directed by the Engineer. The channel of the bed shall be flushed with invert of sewer line to facilitate smooth flow. The brick wall of the manhole shall be plastered from inside with 20 mm thick cement (sulphate resistant) plaster in cement mortar 1:1. All incoming pipes/laterals in the manholes shall be properly finished.

All the Cast Iron (CI) steps weighing 5:44 kg each shall be supplied and replaced. The manhole frame and cover shall be removed, cleaned and painted with black epoxy/bitumen paint and installed properly so that it is seated evenly within the manhole frame and flushed with the road or ground level. The broken /damaged manhole covers and frames shall be replaced with new ones by the contractor. It is anticipated that approximately 10% of total manhole covers and frames under the scope of work will be required to be replaced with new ones. The contractor is required to allow for the same in his rates for repairs of manholes. The replaced broken old manhole covers and frames shall be returned to BMC by the contractor. The type, design of manhole and manhole frame and cover shall be standard heavy duty type manholes, including heavy duty frame and covers as per BMC standards. It is anticipated that approximately 10% of total manholes are buried under the road surface. If the manhole is buried, the same shall be raised up to the ground level. While raising the manhole, the profile of the manhole shall be maintained. If the shape is found to be distorted the same shall be rectified to restore the profile of manhole.

If it becomes necessary to break open the upper portion of the manhole for lowering installation machine into the sewer line during installation process, the entire cost for such breaking of upper portion of manhole and reinstatement of the same shall be allowed by the contractor in the rates quoted for this item of repairs of manholes. After repairing the manhole, the contractor shall collect data of repaired manholes and sewer line using the 'Manhole Record Sheet' provided under Annexure and update the same in the sewer database of SUMC at Dadar without any extra cost.

The cost for all the activities mentioned above shall be included in this item of repairs to manholes provided in the Bills of Quantities.

4.13 Construction of manholes

During the execution of work, if it is decided to construct a new manhole at a particular place from the point of view of facilitating future maintenance of sewer line or it becomes necessary to construct a new manhole at a place where collapse is observed/pit is taken for accessing sewer line, then under similar situations, the contractor shall construct a new brick masonry conical manhole at a place so decided. A separate B.O.Q. item is provided for construction of new manhole. The manhole shall be constructed as per standard design of conical shape manholes followed in BMC. The construction of manhole shall include built in brick masonry in cement mortar 1:3, plastered both inside and outside with 20 mm thick cement mortar 1:2 and neat cement rendering so as to give a smooth surface, including 300 mm thick M.15 cement concrete in foundation and in haunches and channels finished smooth with 20 mm thick cement plaster in cement mortar 1:1 and providing C.I. steps (weighing 5.41 kg each) staggered at 300 mm. c/c including 75 mm wide vata all round the external portion of the manhole and the foundation concrete in cement mortar 1:1 and supporting the incoming pipes with brick masonry wherever necessary including C.I. extra heavy duty (EHD) air-tight circular frame & cover (minimum 230Kg.) with hinge / chain resting on 30 cm high cement concrete M.20 cap with necessary centering etc. all complete as per standard specifications and directions including finishing the cap with cement plaster on both sides 1:2 and neat cement rendering so as to give a smooth surface in line and level with the brick masonry surface (Depth of Manhole measured from top of manhole cover to Invert level of manhole all with safety precautions and as directed. The contractor shall use sulphate resistant cement for plastering of manhole, the cost of which is deemed to be included in the cost of construction of manhole.

4.14 After rehabilitation CCTV survey and commissioning of line

Following completion of sewer rehabilitation works, the sewer shall be re-cleaned to remove all loose extraneous material including material and/or cut pipe segment, which shall be prevented from passing downstream into the pipe stretches.

The Contractor shall use suitable equipment for removing such material and disposed off the removed materials etc at approved disposal grounds.

The sewer shall then be finally inspected by CCTV to confirm that the sewer rehabilitation work is complete and the sewer is ready for commissioning.

The final Colour CCTV inspection reports together with colour photographs of the rehabilitated sewer shall be submitted to the Engineer for final approval.

5 Re-commissioning of Sewer Lines

On execution of work activities, the sewer line shall be re-commissioned by removing all coffer dams, pardis constructed, stoppers, diversions, temporary pumping arrangements, etc.

All the other sewer lines and storm water drains used for temporary diversion of sewage flow shall be made good by the contractor at no extra cost.

The sewer shall not be re-commissioned until the Engineer has granted permission. The Engineer will retain the colour CCTV disks/Compact disks and pre and post photographs of the works.

6 Quality Control

6.1 Quality Assurance

The raw material (liners, sealants, etc.) shall be manufactured in a facility with ISO 9001:2000 certification.

As a part of the quality assurance procedures the contractor shall keep records of the following minimum at site office against the individual serial numbers of output product:

- Raw material batch details, including source,
- Acceptance test records
- Purchase date
- Shelf life at time of use

The contractor shall take necessary precautions and measures during the installation process so as to insure the installation of the liner as per the contractual conditions and specifications and free from any type of installation defects.

6.2 Quality Control Test

Type test and quality control tests shall be carried out as per Quality Control / Assurance Procedure to be submitted by the contractor and approved by the Engineer. The Engineer shall inspect testing equipment, witness test and review documentation as he so wishes.

6.3 Process Control Sheet

Process Control sheets shall be completed for each sewer. The Contractor shall complete a Process Control Sheet for each sewer undergoing rehabilitation and shall submit a copy to the Engineer once rehabilitation has been completed. The typical Process Control Sheet is covered under Annexure -L.

Duly filled process control sheet shall be submitted by Contractor duly signed by the Contractor's site engineer and Engineer's representative on site.

7 Testing

7.1 General

- (1) Testing shall be undertaken on the lining material and its constituents.
- (2) The testing program shall include pre installation testing of pre formed materials, testing of constituents before and after their combination.
- (3) All tests shall be in accordance with the relevant standard for the specific material or in accordance with recognized tests developed and proven for the lining system.
- (4) Quality Control tests and Field tests shall be conducted to ensure that the installed product achieves the required standards.
- (5) For reference purpose only, reputed testing institutions for calibration and testing of the materials on field are Indian Institute of Technology Mumbai, University Institute of Chemical Technology (UICET; Formerly UDCT), Mumbai or any institution or testing laboratory. The contractor shall submit Test Reports from the Testing Institution to the Executive Engineer.
- (6) The Contractor will prepare all samples for delivery to the testing institution as directed by The Engineer. This cost and administrative costs for co-ordinating all testing is deemed to be covered in the Contractor's rates for this item.

7.2 Pre-Installation Testing

- (1) For linings the pre installation testing program shall include the testing of three prepared samples for the same series of tests to those required for the installed lining. The frequency of testing shall be as specified in Quality Assurance / Control procedure.

- (2) As a minimum these tests shall include determination of the short term tensile strength, flexural strength and the short term flexural modulus. These tests and other type tests normally carried out on the lining material shall be performed in accordance with the relevant standard for the lining material.
- (3) Samples for testing may be prepared using the procedure given in relevant ASTM/BS/WIS/IS standard.
- (4) The following tests shall be carried out by the Contractor at a testing laboratory or tertiary institutions as approved by the Engineer to demonstrate that the liner installed indeed achieved the design values that are used in the design calculations.
- (5) If, during the course of the contract, there is a change in manufacturer and/or change in source of materials used, another type test will be required unless otherwise directed by the Engineer in writing.
- (6) All test samples shall be made and delivered by the Contractor to the testing institutions in the presence of Engineer's representative.
- (7) The contractor shall be deemed to have included in his bid price for the cost of any transportation, preparation of samples, unused test samples, waste materials, unusable liner sections of the test piece and disposal of waste materials, & etc. Testing in contract is described below.
 - a. Physical inspection
 - b. Tensile strength/ Tensile modulus of elasticity
 - c. Flexural strength/ Flexural modulus of elasticity
 - d. Density
 - e. Hardness
 - f. Impact resistance
 - g. Abrasion resistance
 - h. Coefficient of thermal expansion
 - i. Chemical Resistance
 - j. Hydraulic Roughness
 - k. Ring stiffness test
- (8) Corresponding test reports and results duly endorsed by the testing institutions shall be provided to the Engineer. Details of standard test procedures to be followed shall be as per relevant codes & standard practices and the documents referred to therein.

7.3 Acceptance Criteria

The finished lining shall be free of all defects that affect hydraulic performance or structural adequacy. This shall include defects arising from substandard materials, faulty or inaccurate manufacture, inadequate preparation, faulty installation or workmanship.

Defects which are considered unacceptable for linings include, but are not be limited to the following:

- Unsatisfactory Hydraulic Performance
- Insufficient Structural Adequacy
- Irregularity In Lining
- Infiltration, Leakage Through the Lining/ Spiral joints
- Poor quality cut outs
- Inadequate seals at access chambers, manholes or laterals
- Pinholes, cross breaks, cracks
- Dislodged, twisted, torn, skewed or leaking joints

7.4 Standard of Finish

The lining with annulus gap grouted shall be a close fit against the original pipe along the whole of its length and lateral connections shall be clean with no projections.

The lining shall be free from visible defects.

In the event that the lining is unacceptable due to partial collapse or due to any reason thereof, the Contractor shall remove and replace by “No Dig” method with a lining of the same thickness as the failed lining at his own cost including making good the damage occurred to the sewer. The Contractor shall submit to the Engineer for approval a complete method statement of these or any other remedial processes he proposes to use. All such remedial works of renovation, repair or replacement and any ancillary works needed in this connection and maintenance of the flow shall be carried out at no risk and cost to BMC.

7.5 Rescue / Remedial Measures

- i) The Contractor shall submit a comprehensive procedure of rescue/remedial measures to be adopted by him in case of failure of the liner at any stage. The procedure submitted must include a minimum of following:

- a) The Rescue/Remedial measures to be adopted in case of failure of the liner during installation stage.
 - b) The Rescue/Remedial measures to be adopted in case of a failure of the liner during testing/quality control stage.
- ii) The Contractor shall submit the detailed plan at the bidding stage. The Contractor shall be solely responsible for remedial measures and re-installation and restoration of the sewage flow. All Such measures shall be entirely at the risk and cost of the contractor.

8 Payment Schedules

The following payment conditions shall be read along with GCC clause no. 12 - Payment, Tax & Claims.

The payment schedule for each item shall be as follows-

Item No.	Major Work Activities	Payment (in % of Quoted Price of the Item)
1	Preparatory works	
	After successful completion of preparatory works	100% At actual
2	Temporary plugging of sewer lines by coffer dam	
	a) After successful construction of coffer dam on the sewer line under execution	50% At actual
	b) After removal of coffer dam upon successful completion of work of isolated sewer line	50% At Actual
3	Permanent plugging of sewer line by brick wall pardi.	
	a) After successful construction of brick wall pardi in the sewer line under execution	50% At actual
	b) After removal of brick wall pardi upon successful completion of work of isolated sewer line	50% At Actual
4	Taking trenches for diversion of sewage flow	
	a) After successful diversion of sewage flow by taking trenches	40% At actual
	b) After successful reinstatement of trench and road surface	60% At Actual
5	Diversion of Sewage flow by pumping arrangement	
	a) After successful installation of the pumping / flow by-pass arrangement of the sewer line under execution.	50% At actual
	b) After complete desilting and transportation of silt of the sewer line under execution.	30% At actual

Item No.	Major Work Activities	Payment (in % of Quoted Price of the Item)
	c) After successful completion of the rehabilitation work of isolated sewer line under execution.	20% At actual
6	De-silting and transportation of silt to dumping ground	
	After successful De-silting and transportation of silt to dumping ground.	100% At actual
7	After De-silting CCTV survey	
	a) After successful completion of CCTV Survey	90% At actual
	b) After successful rehabilitation of sewer section under consideration.	10% At actual
8	Taking pits for accessing sewer lines	
	c) After successful excavation of pit for accessing the sewer line under execution	30% At actual
	d) After successful reinstatement of road surface & after successful rehabilitation of sewer section under consideration.	70% At Actual
9 to 13	Design, Manufacture, Supply & Deliver at site structural liner	
	After successful installation of liner for the sewer under execution.	100% At actual
	Note :- Interim payment of B.O.Q. item no. 9 to 13 will be admissible only when the liner of quantity as mentioned in interim payment are successfully installed as per BOQ item no. 14 to 18 respectively and successful manhole repairs on the corresponding sewer length mentioned in interim payment are carried out as per BOQ item no. 20. No partial payment towards supply and delivery of the liner	

Item No.	Major Work Activities	Payment (in % of Quoted Price of the Item)
	is admissible. The payment of supply and installation of liner will be made for the actual installed length in sewer stretch only (Face to face).	
14 to 18	Installation of structural liner	
	After successful installation of liner for the sewer under execution.	100% At actual
19	Picking up and Diversion of body connection to the nearest manhole	
	After successful diversion of body connections of the sewer under execution to the nearest manhole.	100% At actual
20	Manhole Repairs	
	After successful repairs to manholes on sewer line	100% At actual
21	Construction of manholes	
	After successful construction of manholes on sewer line	100% At actual
22	After rehabilitation CCTV survey	
	After successful completion of CCTV Survey	100% At actual

9 Penalty

Following penalties shall be applicable for not complying with the time schedule of the activities of the work as mentioned below.

Sr. No.	Penalty
1	The contract period includes a mobilisation period of 60 days. The contractor shall mobilise the resources and complete preparatory works within the period of 60 days beyond which a penalty at rate of Rs. 10,000/- per day shall be levied until completion of preparatory works.
2	Silt removed from sewer shall be lifted and transported to the designated dumping site within 03 days of removal from sewer line, failing which penalty of Rs. 5000/- per day per spot shall be levied until lifting and transportation is done.
3	Post rehabilitation CCTV survey shall start within 03 days from the installation of liners of the sewer line under execution, failing which penalty of Rs. 5000/- per day per site shall be levied until start of CCTV survey
4	If the milestones set as per S.C.C. clause are not achieved in stipulated time, the penalty of Rs. 10,000/- per day per Milestone will be deducted from the contractor's RA bills till completion of the respective milestone. The total amount of penalty shall not exceed 10 % of accepted contract cost. If the attainment of the milestones is delayed for reason not attributable to the contractors no moneys will be deducted.

10 Guidelines for Safe Entry and Working inside Sewers

10.1 Introduction

These general guidelines are intended to assist the Contractor in the development of safe work practices. Where the risk assessment indicates that a particular hazard cannot be present, the precautions to control that hazard do not apply. Remember that a favourable history does not guarantee absence of hazard on this occasion.

10.2 Confined Space

“Confined space”, in relation to a place of work, means a space of any volume which a person may at any time enter or be allowed to be enter in which the atmosphere is liable at any time to be oxygen deficient. This includes but not limited to pipes, sewers, manholes, tunnels, shafts, ducts, other similar sewerage installations and etc.

The Contractor shall develop acceptable work practices and safe entry procedures based on the guidelines provided hereunder and the Corporations’ guidelines on safety precautions to be observed during execution of work included in this specification and implemented on site.

10.3 Notification to Work in Confined Space

The Contractor shall obtain an entry permit from the Engineer for each occupancy of any confined space. The Contractor shall furnish all required details in an approved format to the Engineer for permission to work in confined space prior to the entry. Where prolonged work is involved, the permit must be renewed for each shift. An incident which substantially alters the condition of a confined space entry requires immediate evacuation and reassessment of the condition. Copies of all entry permits relating to previous shift must be submitted to the Engineer immediately upon exit of the persons working in those shifts and in any case before further entry permits are sought. No new entry permits shall be issued unless proper record of exit by workmen from earlier shift is submitted to the Engineer’s representative.

10.4 Air Quality and Ventilation

Contaminant control and effective ventilation are major factors influencing air quality in a confined space while working in sewers/manhole. The ventilation must be adequate to clear pre-existing contaminated air and maintain a respirable atmosphere during planned work. This ventilation may be permanently installed or portable equipment used for this task. For general ventilation, fresh air shall be supplied to the workplace. Within the sewer system this creates an environment which displaces contaminated air in the immediate vicinity.

Where a task generates atmospheric contaminants in a specific area, adequate local exhaust ventilation should be used to remove the contaminants. Where failure of the mechanical ventilation system would result in deterioration of air quality, the controls must be clearly tagged to prevent accidental interference and the ventilation system monitored while the confined space sewer/manhole is occupied. Self Rescuers must be carried whenever failure of the ventilation system or changes in the working environment can create a contaminated atmosphere. The self rescuer can be a self contained breathing apparatus, oxygen self rescuer, or short duration self contained breathing apparatus, depending on the time taken to reach open air.

Note: Obtain occupational hygiene advice on the- selection or performance of ventilation system where this is not specified in the work practice.

10.5 Lighting

Any regularly accessed confined space sewer/manhole should be illuminated with electrical installation to appropriate Indian Standard or equivalent standard. Portable lighting may be used to supplement permanent lighting in the workplace. Temporary mains powered lighting installed for a task must comply with the requirements of appropriate Indian Standard. Miners lamps, mounted on a safety helmet may be used as an alternative to a hand held torch for personal illumination.

The possibility of a flammable atmosphere must be eliminated by isolation, cleaning, ventilation purging etc.

Where the confined space has been proclaimed as a flammable gas hazard area, all fixed and temporary electrical installation must comply with appropriate Indian standard. Torches and portable lights must comply with appropriate Indian standard.

10.6 Equipment usage, Standards and Maintenance

All confined space safety equipment must meet established standards and be of appropriate design for the proposed usage. The equipment must be checked for visible damage and correct operation before each use. Preventative maintenance must be performed by trained, and where necessary, authorised persons at the intervals recommended by the equipment manufacturers.

10.7 Room to Work

When the constricted volume of a worksite prevents normal work postures and tool movement, the need for special tools or frequent work rotation should be considered.

10.8 Control of Flooding

When a confined space is normally liquid filled, accidental return to service must be prevented by double isolation e.g. insertion of suitable blanking piece, plugging with inflatable plugs, temporary coffer dams as a second isolation in a manhole or other effective means.

10.9 Flow Control

Where a sewer is entered while flowing, rapid increase in flow must be prevented by use of stop logs. Isolation of pumping stations, weather watch and other means appropriate to the sewer catchment. Adequate communication with the person responsible for flow diversion must be maintained for the duration of the entry.

10.10 Drowning

Where deep or flowing water is present, use of personal flotation devices. Safety harness and lifeline, safety nets etc. as appropriate to prevent drowning.

10.11 Fire and Explosion

Adequate precautions must be taken to minimise the risk of fire or explosion when entering a confined space for any purpose during all activities of sewer desilting, CCTV inspection, condition assessment, rehabilitation, etc. in particular while working in manhole/sewer

10.12 Presence of Flammable Gas

The presence of flammable gas, flammable dust or the possibility of the presence of airborne substances in flammable quantities may create a hazardous Area. Care shall be taken by the authorised person to determine the presence of any such flammable situation in the confined space before entry. Smoking or lighting any cigarette or box matches in confined space shall be strictly prohibited. The flammable gases of concern are methane, digester gas, vapours from flammable liquid, and vapours and gases from trade waste discharges.

10.13 Manual Handling of Tools etc

Safe system of work should be followed to protect against fall of persons or objects and crush by moving or falling objects. Extra care is needed if normal manual handling gear is not available or confined space safety gear (Harness, Respirator) is worn.

10.14 Noise

Reverberation within a confined space can increase noise levels, especially if more than one person is working. Hearing protection may be required. The Contractor must comply with the requirement of noise levels under Environmental Protection Act and Rules.

10.15 Vermin

All persons working in confined spaces should be aware of the health hazards presented by the presence of vermin. The presence of cockroaches etc does NOT indicate that the atmosphere is free of danger to health.

10.16 Standby and Communication

A member of the confined space work team is allocated the task of maintaining communication with the members inside the confined spaces. This task may be rotated among the members of the team. The Standby person must be trained and be physically capable of providing the assistance and life support in an emergency and must have sufficient proficiency in Marathi, Hindi and English languages to promptly communicate information by radio or telephone when required.

While acting as stand-by, this person must not enter the confined space or leave the vicinity unless relieved from this duty. A standby person is needed for all confined space entries. The Safe System of Work must indicate the process for communication from the confined space to the standby, e.g. 2 way radios. 'Man down' alarm, line of sight etc.

10.17 Fitness Assessment

A periodic assessment of fitness, including cardiovascular and respiratory health, is required to ensure that all persons entering confined spaces, or acting as the stand-by person, can comply with the physical demands of the job, without risk to their health.

10.18 Emergency Rescue and First Aid

No person shall enter any confined space, even in an emergency, without first ensuring all safety requirements have been met. A safety emergency plan may assist in a safe, speedy response in the event of an emergency.

All confined space work teams must be trained and equipped to sustain life and be able to summon emergency help. Provide first aid and assist emergency service personnel, if requested.

Rescue of persons apparently overcome by toxic gases in a sewer/manhole or other confined space must only be attempted by trained persons using supplied air breathing apparatus. Stabilisation of other injuries must be prioritised against the availability of breathable air.

10.19 Gas Detector

The Contractor shall engage an authorised person for gas monitoring and detection. This person shall be trained to operate and response test gas testing equipment and is

authorised by management to perform the necessary tests to decide whether a confined space is fit to enter.

Gas testing can only be performed by persons trained in gas testing, using equipment appropriate for the anticipated contaminants. This person can perform other duties provided these do not conflict with the gas testing task

10.20 Specialist Gas Detector

This person has technical qualifications and acceptable training to operate and response test gas testing equipment, including hydrocarbon detectors and detector tubes and assesses portable ventilation systems. He is authorised by management to carry out atmospheric testing to establish entry conditions for all confined space categories. He also performs tests to verify whether hot work is permitted in gas hazard areas. He shall ensure that the Gas Detector unit has been properly calibrated and fit to be used in the given circumstances.

10.21 Cleaning

Where possible, cleaning should be performed without entry to the confined space. Particular attention should be given to the probability of releasing hydrogen sulphide when disturbing microbial active sludge and sediments which have accumulated in a confined space. Supplied air respiratory protection shall be worn where such residues exist and effective ventilation cannot be guaranteed. Continuous gas monitoring is required even when supplied air respirator protection is used.

Hose couplings should be designed to resist accidental dislodging or loosening. Both the operators and the standby person should be able to stop the flow of cleaning material into the confined space.

Hydro jetting must be performed according to the relevant regulations. Where chemical compound is used in within the confined space, the chemical compound should be classed in the Material Safety Data Sheets as non-irritant to respiratory system, eyes and skin. If this is not possible then appropriate respirator skin and eye protection must be worn. Substance specific air monitoring may be required.

10.22 Visitors

A visitor to a confined space is a person other than a contractor, who is not a member of the Confined Space Work team. Visitors must be escorted and trained or inducted in the necessary skills for that entry.

10.23 Hazard Control

Hazards to be identified and controlled include but are not limited to: access. Mechanical and electrical isolation, flow isolation and control, drowning and engulfment, last known contents, atmospheric contaminants, temperature extremes, security and public access.

10.24 Definition

Parts Per Million (ppm)

Parts of gas or vapour per million parts of contaminated air by volume at 20oC and 1 bar pressure.

1 ppm = 0.0001%

Percentage

Parts of substance per 100 parts of air, water etc.

1 % = 10,000 ppm

10.25 Air Quality Standard for Entry

The acceptable limits of some gases in confined spaces are:

Gas/Vapour Present	Acceptable Limits
Oxygen Content (O ₂)	19.5% to 23.5% by volume
Flammable Gas/Vapour	5% of Lower Explosive Level (LEL)
Hydrogen Sulphide (H ₂ S)	10 Parts Per Million (ppm) Maximum (For Visitors) Reducing to 5 ppm for members of the public
Carbon Monoxide (CO)	30 Parts Per Million (ppm) Maximum Carbon Monoxide (CO) (For Visitors) Reducing to 10 ppm for members of the public.

10.26 Carbon Monoxide (CO)

Carbon monoxide is colorless. Odorless, flammable and toxic. Its common sources are fire, motor vehicle exhausts and cigarette smoke.

This gas is a chemical asphyxiant and is readily absorbed by the hemoglobin in the blood. Then hemoglobin is unable to transport oxygen to the body tissues and the body becomes oxygen starved. These effects are more pronounced with hard work or for heavy smokers. Symptoms include headache (50-200ppm), nausea (400ppm), and irregular heartbeat (1200ppm). Collapse and death (2000ppm).

The entry permit limit is 30 Parts per Million (ppm). Maximum with an IDLH value of 1500 ppm. The entry limit reduces to 10 ppm for members of the public. (IDLH- Immediately Dangerous to Life and Health)

Note: Some gas detecting machine sensors are cross sensitive, H₂S being detected by the CO cell and vice versa. Alarm by either sensor requires evacuation and re-evaluation of the safe system of work.

10.27 Flammable Gas/ Vapour

A gas or vapour which will burn when mixed with air in certain proportions and ignited.

The mixture which contains the least amount of flammable gases which will explode is called the Lower Explosive Limit (LEL) The mixture, which contains just enough Oxygen to let the flammable gas explode. Is called the Upper Explosive Limit (UEL). The flammable range varies for gases and vapours.

Many of these have toxic effects when inhaled and a Workplace Exposure Standard has been issued to protect workers from this Gas/Vapour. The Contractor shall obtain relevant Workplace Exposure Standard (WES) for use in the site.

Gas/ Vapour	Flammable Range in %	5% LEL	WES
Butane	1.9- 8.5	950ppm	800ppm
n-Hexane	1.2 -6.9	600ppm	50ppm
Methane	5-15	2500ppm	Axphyxiant
Petrol	1.3 - 6	650ppm	900mg/cum
Trichloroethylene	12.5 - 90	6259ppm	50ppm

10.28 Hydrogen Sulphide (H₂S)

Hydrogen sulphide is a colourless, toxic and flammable gas which usually has the odour of rotten eggs. In sewerage systems it is usually derived from the action of bacteria on the sulphur compounds in anaerobic or old sewage. A small amount of sludge or slime in wet wells or sewers will release a lot of H₂S when disturbed.

After a few minutes exposure, the ability to smell hydrogen sulphide by a person is lost and then hydrogen sulphide becomes more dangerous as its presence is no longer obvious and the person could become an innocent victim.

It can sometimes be detected by odour at less than 0.1 ppm but can be readily detected by odour at 4ppm. More serious health effects include eye irritation (10ppm), respiratory irritation (50 ppm), headache, nausea, dizziness (200ppm), collapse and death (300ppm).

The entry permit limit is 10 Parts per Million (ppm), Maximum with an IDLH value of 300ppm. The entry permit reduces to 5 ppm for members of the public.

Note: Some gas detecting machine sensors are cross sensitive, H₂S being detected by the CO cell and vice versa. Alarm by either sensor requires evacuation and re-evaluation of the safe system of work.

10.29 Methane (CH₄)

The most common flammable gas found in sewers is methane. This mainly comes from gas pipe leaks in the city's gas distribution systems. It can also be derived from the action of anaerobic bacteria on rotting material. However a range of other flammable gases and vapours may be encountered. These include LPG, petrol vapour and other solvents.

Digester gas, found in anaerobic sludge digesters on sewage treatment plants is a flammable mixture of methane nitrogen and carbon dioxide.

Methane is a colourless, odourless gas. Although pure methane is slightly lighter than air. The relative density of methane/ air mixtures is similar to air in the entry permit range. Methane is hazardous because of its flammability, i.e. between concentrations of 5% to 15% in air, may explode if an ignition source is present.

High concentrations of methane may result in oxygen deficiency. Injury or death results from lack of oxygen not methane toxicity classifying methane as a simple asphyxiant.

Note: that the entry permits level is 5% of LEL, NOT 5% flammable gas.

10.30 Oxygen Content (O₂)

Fresh air contains about 20.9% oxygen.

In a confined space, oxygen can be used up by bacteria in sewage or sludge, rusting of iron fittings, burning (or welding) or displaced (pushed out) by other gases.

Breathing of air which contains reduced oxygen results in increasingly serious health effects. These range from impaired coordination and faulty judgement (12-16% O₂) to collapse and rapid death (less 6% O₂)

Increased oxygen readings can only come from instrument error or by leakage from oxygen cylinders, liquid oxygen tank, etc. High oxygen levels greatly increase fire hazards, fires burn fiercely; oily clothing and hair can catch fire without an ignition source.

The entry permit levels are 19.5% to 23.5 % by volume.

10.31 Other Atmospheric Contaminants

Entry, unless wearing air supplied breathing apparatus, is not permitted unless atmosphere contaminants are below the relevant 8 hour time weighted average (TWA) Workplace Exposure Standard. This limit applies for all entries including brief exposures. Entry wearing breathing apparatus is only permitted where the concentration of the contaminant is within the protection factor of the breathing apparatus and below the IDLH (Immediately Dangerous to Life & Health) value.

10.32 Sewer Gases

Air in contact with live sewage contains gases released from the sewer. For safe entry, contaminated air must be replaced with clean air by ventilation of the confined space. The resulting atmosphere must be confirmed by gas testing.

Discharge of untreated wastes, e.g. hypo chlorites, electroplating effluent, acids may result in generation of chlorine, hydrogen cyanide and other harmful gases some distance from the original discharge.

10.33 Confined Space Categorisation

The confined space category is a guide to developing a safe system of work. The confined space category may change to a more stringent level as a result of adverse environmental factors or work produced contaminants. Alternatively it may change to a less restrictive category if appropriate engineering upgrades, whether temporary or permanent, are implemented.

Category 1 - Confined Space

Entry allowed only if flammable gas is below 5% of L.E.L. and other gases are within the protection factor of the respiratory protective equipment used.

Visibility must be adequate

Personal Safety

- Wear specified protective clothing for the hazards
- Wear safety harness
- Use lifeline where appropriate

Respiratory Protection

- Test air quality prior to entry by a Specialist Gas Detector
- Ventilate to reduce contamination

- Monitor air quality as directed by the Specialist Gas Detector
- wear airline breathing apparatus with backup air supply OR wear self contained breathing apparatus

Note: Oxygen self rescuer is not a backup for an airline used in contaminated atmospheres.

If the Category 1 confined space is a chemical storage tank, it can be reclassified to a Category 2 or 3 confined space when the Specialist Gas Detector confirms that the chemical has been cleared from the interior.

Sewer, wet wells etc can be reclassified by a Specialist Gas Detector to a lesser confined space only when an approved safe system of work is employed. This safe system of work must provide for demonstrated control of airborne contaminants and other hazards in the workplace, to provide conditions equivalent to a category 2

Hot work requires control of fire and explosion hazards and may require air supplied breathing apparatus to control fumes irrespective of the confined space category. A Hot work permit is required in addition to the normal entry permit.

Category 2 - Confined Space

Entry allowed only if all gases are within entry permit limits

Personal Safety

- Wear specified protective clothing for the hazards
- Wear safety harness
- Use lifeline where appropriate

Respiratory Protection

- Test air quality prior to entry
- If air quality test fails refuse entry until reason found and rectified, or revert to Category 1 entry conditions.
- Ensure adequate ventilation
- Monitor air quality during entry
- Carry oxygen self rescuer

Note: Standby person must have SCBA readily available.

Hot work requires control of fire and explosion. Hazards and may require air supplied breathing apparatus to control fumes irrespective of the confined space category. A Hot work permit is required in addition to the normal entry permit. A hydrocarbon check by a 'specialist gas detector' is required unless the environment can be upgraded to Category 3 conditions.

Category 3 - Confined Space

Entry permit required (unless using a posted entry procedure for routine operation of the facility) for each shift that the structure be occupied.

Personal Safety

- wear protective clothing specified for the hazards

Respiratory Protection

- test air quality prior to entry
- If the proposed work can generate airborne contaminants, arrange ventilation. Respiratory protection and/or air quality monitoring as appropriate.
- Hot work requires hot work permit and control of fumes.
- If air quality test fails, revert to Category 1 entry conditions or refuse entry until reasons found and rectified.

Category 4 - Confined Space

Follow facility safety procedures.

Personal Safety

- Wear protective clothing specified for the hazards

Respiratory Protection

- Evacuate when alarms advise
- Hot work requires control of fumes.

Separate Permit(s) required for chemical cleaning and/ or Hot Work. If evacuation alarm sounds, evacuate following site emergency procedure. Reoccupy as a Category 2 confined space.

10.34 Generic Entry Summary

	Category 1	Category 2	Category 3	Category 4
Entry Permit	yes	yes	yes	yes
Standby Person	yes	yes	yes*	yes*
Communication to remote standby	yes		yes*	
Protective Clothing	yes*	yes*	yes*	yes*
Safety Harness	yes	yes		
Lifeline/Fall arrester	yes	yes		

	Category 1	Category 2	Category 3	Category 4
SCBA	yes*	#		
Airline and backup	yes*			
OSR	yes*	yes*		
Specialist gas tester	yes			
Gas tester		yes	yes	yes
Gas monitoring		yes		
Ventilation	yes*	yes*	yes	yes

***Appropriate choice given in Safe Work practice for the task**

Required by Standby Person

10.35 Confined Space Entry Permit Format

A general entry permit for working in sewerage works is given in 'Annexure K' as an example.

10.36 Maintenance of Equipment

Any safety equipment, tool, gadget or machine for use on site must be maintained as per manufacturer's recommendation and records kept of this maintenance. The Safety Officer/engineer shall check the equipment to be used and certify it fit for use every time it is used on site.

Compressed air bottles must be refilled by a source which warrants that the air meets quality standards of BIS/AS or equivalent

Air from air compressors must be treated to meet quality standards of BIS/AS and tested periodically to demonstrate compliance.

All respiratory protection systems must be used in accordance with BIS/AS or equivalent.

10.37 Gas Detector Equipment

The Instrument must be operated according to the manufacturer's instructions.

The instrument must be checked for correct functioning using a test gas ('Response Check') every day when the instrument is used to check possibly contaminated atmospheres.

If the instrument is used less frequently, it can be response checked each time it is used.

The instruments must be calibrated at regular intervals according to the manufacturer's specifications.

It shall be the responsibility of the safety officer/engineer to ensure that the Gas Detector Equipment is in perfect working condition and providing accurate readings representing the atmosphere it is required to be used.

10.38 Standards

The following equipment must meet the requirement of the relevant standard.

- a. Self contained breathing apparatus
- b. Oxygen Set (Rescuer)
- c. Airline compressed air breathing apparatus

All workmen should use all the same-model of this equipment for interchange ability.

Obtain professional advice for selection of airline breathing apparatus and compressed air self rescuers.

Portable gas detection instruments must meet the following requirements

Sr. No.	Gas Monitored	Range Required	Resolution Required
1	Oxygen	1% - 30%	1 %
2	Flammable Gas	1% - 100% of LEL	1% of LEL
3	Hydrogen Sulphide	1 - 50 ppm	1 ppm
4	Carbon. Monoxide	1 - 400 ppm	1 ppm

10.39 Safety Procedures and Precautions

(To be taken during desilting, CCTV inspection and condition assessment works as well as installation and testing procedures as per standing guidelines of BMC)

- (1) Before opening any manholes, the stretch shall be properly barricaded and isolated in accordance with the safety requirements and the permission issued by the traffic police. The workmen on ground shall be provided with reflective safety jackets and a person shall be positioned to guide the traffic in vicinity of the work site to prevent any traffic accident involving the workmen or third party. To begin with the work of desilting, initially six consecutive manholes are to be opened, two on the upstream

and two on the downstream side of the two manholes, on the actual stretch to be cleaned or desilted. The manholes should be kept open for one hour prior to the starting of cleansing operations and should be so kept open during the whole duration of cleaning operations. This to be done for allowing the combustible gases to escape naturally. No lighted match sticks should be thrown in the manhole. This may cause fire and explosions endangering the life of the workmen and the pedestrians. This may also damage to the sewer and other adjoining utility services, if any.

- (2) Jalis (safety screens) should be placed over all the opened manholes to prevent pedestrians etc., from falling in. Tripod stands with flags painted red should be placed over the manholes. The letters "Danger - Manhole Open" should be written in white reflective paint on the red background.
- (3) The Contractor should keep sufficient number measurement rods to take measurement of water and silt.
- (4) Manholes shall be kept open for minimum one hour to allow foul gases to escape and simultaneously there should be forced purging with the help of an air blower to completely clean the air in the sewer.
- (5) Sewage levels shall be checked in the manholes and the same should not be more than 100mm (4").
- (6) Gas detector shall be used to check the presence of gases and the worker shall be allowed only after it is confirmed by the Safety Officer/engineer in writing by issuing an Entry Permit that the condition insider the manhole is safe for man entry. Wherever necessary, or where the sewer line is heavily silted or there are chances of gas eruption, the person entering the manhole shall be provided with gas mask or breathing apparatus and hand blower or mechanical blower for use. Notwithstanding, any other conventional tests use of gas monitor in working condition in every case is mandatory. The gas monitors should be accurately calibrated after regular intervals to maintain their reliability.
- (7) **Working inside the Manhole**

After all these tests are carried out successfully, particular care should be taken where sewer is heavily silted that scum and sullage thoroughly stirred and disturbed by means of long bamboos / G.I. Rod from the top of the manhole to allow entrapped gases within silt pockets to escape before allowing the labourers to enter into the manhole.

The depth of water should be measured and the labourer should be allowed to enter the manhole only when the level of water is less than 100 mm (4").

Before the labourer is allowed to get down inside the manhole, he should be asked to apply barrier creams all over the body as a precautionary measure to safeguard against itching and burning sensation. Safety belt/ harness with sturdy rope should be tied around his waist and chest when the labourers getting down, another man at the top should hold the other end of the rope which is tied to the harness of the labourers getting down / going down the manhole.

Not less than two people should be allowed to work inside the manhole at a time. Working alone in manhole/confined space shall not be permitted under any circumstances. They should always be sent in pairs. The labourers should not be asked to work for more than one hour at a time inside the manhole. If the work has to go on continuously, another pair of labourer should be asked to get down after the one hour period of the earlier pair.

If the labourers who are working inside the manhole show even light discomfort, they should be asked to come up or pulled up. The labourers who are working inside the manhole should given jerks very few minutes to signify that everything is okay with them. A safely secured winch pulley system shall be provided for the worker to get down the manhole or for pulling out the workers.

After getting satisfactory test result and after taking precautionary measures as stated above and issue of safety permit and certification by the Safety Officer/engineer, the worker shall be allowed to descend or enter in the manhole using winch pully system/ aluminium ladder of adequate strength and approved type providing access to the bottom of the manhole. The worker shall wear personal protective gear before working inside the manhole. The workers entering the manhole shall be provided with wadder suit, hand gloves protective head gears, gumboots, abrasion resistant gloves, safety goggle, head lamp etc.

It should be remembered that in spite of the manhole entry tests being carried out, there are chances of eruption of poisonous gases in the silt and the safety officer/engineer shall properly brief the workman working in confined spaces on such issues and ways to overcome any emergency situations. If the worker finds any difficulty in breathing initially or during the work then he should be taken out immediately by means of harness belt. Where the sewer line is heavily silted or there are chances of gas eruption, gas mask must be used while entering the manhole and also during desilting.

If the worker inside the manhole requires any instrument, the same should be tied to rope and lowered slowly inside the manhole ensuring the safety of the worker working inside the manhole.

- (8) On completion of the work, prior to closing of the manhole, the supervisor shall make sure to count the number of workers to ensure that all of the workers who went down the manhole have come out and no worker is left inside the manhole/sewer. The name of all workers shall be tallied with those in the entry permit form and shall be signed by the supervisor prior to submitting the same to the Engineer.
- (9) On completion of the work, all manholes shall be checked and it should be ascertained that all tools or equipment are removed from the manholes the same are properly closed
- (10) The workers emerging out of work inside the manholes and sewer shall be provided with bathing facilities for their hygiene. As necessary health check up shall also be arranged for the workers.

10.40 Scheme for Safety Measures and Welfare of the Workers (Engaged by BMC and its Contractors or sub-contractors)

- (1) Scheme prepared by BMC for Safety measure and welfare of the workers engaged by the Brihanmumbai Municipal Corporation (BMC) or by its contractors engaged for desilting, cleaning and repairs of sewer lines and associated works has been approved by the Bench of Mumbai High Court. The Contractor must follow the scheme for the safety and welfare of the workers engaged. The Contractor is deemed to have read and fully understood the requirements and obligations and made necessary provision in the contract price for the full compliance of the requirements.
- (2) The bidders shall obtain a copy of the scheme from the office of Dy.Ch.E. (S.O.) P&C, and follow the same scrupulously. The Contractor's safety officer/engineer and project manager shall be wholly and solely responsible for compliance with the directives/guidelines.
- (3) Notwithstanding the conditions incorporated by the Corporation in the bid, the Contractor shall obtain his own copy of the scheme and ensure that he complies fully with the statutory requirements. A suitable penalty shall be imposed on the Contractor for noncompliance of the conditions related to health, safety and welfare of the workers and other conditions of the scheme. Under no circumstances the contractors shall be allowed to start the work of cleaning and / or desilting and/or repairs including CCTV inspection and Condition assessment of the sewer lines / manholes, until the requisite insurance cover involving all risks and the workmen and third party are obtained and kept alive by the Contractor and accepted by the Engineer and verified by the Engineer and safety measures are adopted on site. Senior Officers of BMC will also verify during their periodical inspections that proper safety procedures are followed and record is maintained and the various conditions related to safety and welfare of the workers is fully complied with.

- (4) Whenever the work of cleaning and/or desilting the sewer lines are entrusted to private contractors/ sub-contractors, such contractors shall be required to strictly observe all the conditions set out in the scheme. In case of deployment of sub-contractors for desilting/ cleaning purpose, the main contractor shall duly notify the Engineer about the subcontractor and obtain prior approval for deployment of such sub-contractor; notwithstanding the other requirements about sub-contracting. However, the main contractor shall stand solely responsible for the safety of the works/ site.
- (5) Copy of the safety measures in either Marathi or Hindi language or the mother tongue of the workmen shall be given to each worker and also read out to them by the Supervisor/ Safety Officer of Contractors and explained to them
- (6) Non compliance of the scheme for safety and welfare of the workers shall amount to contempt of court and the Contractor shall be liable to face any penal action in this respect in addition to usual penalty as per G.C.C. The amount paid towards compensation to the workers of the contractors shall be recovered from the Contractor through his running bills or any other deposits held with BMC.

10.41 Safety (General)

- (1) Proper ventilation shall be maintained in the manhole and sewer line being desilted. Mechanical blower should be preferably used for half an hour to one hour before entering the sewer line even after getting the safe working condition, while desilting sewer lines where accumulation of silt is heavy. The blowers shall be operated continuously during the desilting of sewer lines which are heavily silted or susceptible to gas generation.
- (2) While carrying out desilting, if required by the Engineer or the site conditions, the contractors shall use blower during the entire period. This would not only ensure safe condition but also ensure comfortable working condition for the worker and would in turn increase his performance and output.
- (3) In some manholes where sewage is falling over workman or causing obstruction, plugging the upstream sewers will be allowed temporarily without any cost to the corporation, provided the Contractor ensures that the upstream sewer line does not overflow. The plugs shall be removed by the Contractor at his risk and cost immediately after the work has been completed.
- (4) A tentative list of various safety tools, overhauls and safety equipment is given and the Contractor is obliged to provide at least the minimum number of safety equipments as indicated therein. The Contractor shall ensure that all workmen are briefed on use of

the personal safety equipment (PPE), safety tools and gadgets and they use the same without fail before entering the manhole, sewer (confined space) etc.

- (5) No worker of Contractor shall be allowed to enter into the manhole for cleaning and desilting the sewer lines unless all the safety tools, shackles and equipment are at site and the worker is equipped with personal safety equipment such as gumboot, wadder suit, headgear, head lamp, hand gloves and harness belt etc and the safety officer clears his entry in the manhole or sewer by issuing an entry permit.
- (6) The contractor should keep “fully replenished first aid box at the site of works”.
- (7) One dedicated vehicle with the safety equipment such as breathing apparatus, diver suit, air blower, escape set etc., shall be made available at each site where personnel are entering the manholes for desilting, CCTV inspection or condition assessment. The same vehicle shall have other facility such as first aid kit, provision for eye wash etc. This vehicle may be used as an ambulance van in case of an emergency or an accident. The driver of such vehicles shall be duly informed about emergency steps and nearest medical facilities/ hospitals and shall be provided with mobile phone and his number made known to each and every person working on site. Special precautions may be needed to prevent inhaling of toxic fumes/gases while stanking (temporary/permanent) etc.

10.42 Welfare of Workmen

- (1) No person below the age of 18 years shall be employed for carrying out cleaning and desilting work of the sewerage system / sewer lines.
- (2) Adequate safety measures shall be taken by the Contractors to protect the workers engaged for sewer cleaning and desilting works.
- (3) The Contractor should impart training to the supervisory staff regarding implementation of this scheme and of safety measures including rescue methods and the use of safety equipment. Such training programme should be repeated periodically. The safety officer shall periodically brief the workers and supervisors and conduct mock drills to ensure that the staff working on site is ready to face any untoward situation.
- (4) The workman entrusted with the work task of sewer cleaning and desilting should have basic functional literacy.
- (5) A detailed medical check up of all the workers must be immediately undertaken. Special emphasis must be given to the study of the respiratory system, the eyes and the skin problems.

- (6) Each worker engaged in cleaning and desilting of the sewer lines / manholes, shall be medically examined once a year and shall not be engaged, if he is suffering from any of the diseases such as respiratory, skin, eye problems, infections, cardiovascular, spinal psychiatric nature etc. He should not be engaged for cleaning and desilting work inside the manhole or sewer lines till he is cured.
- (7) Whether a person is suffering from any of the above mentioned diseases or not shall be certified by registered medical practitioner. Similarly, the contractors engaged in cleaning and desilting operation, shall get their workers, employees medically examined and shall not employ any worker who is found to be suffering from any of the above mentioned ailments. The Contractor shall submit with the BMC a certificate from a registered medical practitioner showing that the workers to be engaged for the said contract involving cleaning and desilting operation are not suffering from any of the above mentioned ailments.
- (8) The workers should be provided with vaccination against certain diseases commonly prevalent among sewerage workers due to the nature of their work.
- (9) First Aid Box properly stocked including washing bottle to wash skin and eyes, should be kept.
- (10) Proper arrangement should be made to get treatment expeditiously, including facilities for speedy admission and treatment in any nearby hospital to the work site.
- (11) The Contractors engaged by BMC for sewer cleaning desilting and repair work, should take out workmen insurance policy at contractor's cost (individual or group) for workers engaged by him for sewer cleaning and/or desilting or repairing.
- (12) The contractor shall maintain washing, drinking water and toilet facility at each Chowky. If no toilet is provided in the chowky, it should be so located that the public toilet is available within a distance of 300 m. The site Chowky should also be equipped with full first aid kit.
- (13) Contractor should provide carbolic soap at the rate of one cake for four days and washing soaps at the rate of one cake for four days for washing clothes that are used by workers. The workers should be asked to take bath after the work is over. In cold seasons i.e. November 15 to January 31st, Contractor should supply sufficient fire wood to workers for warming up after taking the bath.

10.43 Contractor's Responsibility towards Welfare of the Workmen

- (1) A responsible officer of the supervisory cadre (designated Safety Officer) of the contractor should be physically present at the site and he/she should ensure and document compliance of the guidelines under the scheme for measures of safety and

welfare of the workers and entry worthiness in the manhole. He / She should remain physically present throughout the operation and the onus of compliance of these guidelines should lie on him/her.

A log book should be maintained by him/her for giving the date and time, the names of workers, place and other relevant particulars to stay in the manhole etc. If the Engineer is not satisfied about the various requirements as per the scheme then the work should be stopped immediately.

- (2) List of the contractor's employees including their residential addresses, age etc. is required to be supplied by the Contractor in separate register.
- (3) If the contractor has engaged 20 or more labourers, then the contractor is required to be registered under the Contract Labour Act and Inter-State Migrate Labour Act, wherever applicable.
- (4) Contractors should abide by all the rules and regulations in respect of labour laws prescribed by the Government, Authorities and submit the returns etc.
- (5) The workmen compensation should be paid to the Contractor's employees as per the provisions of Workmen's Compensation Act.
- (6) Contractor should maintain a muster of all the labourer working at site specifying the persons getting down the manhole.
- (7) No person other than the Contractor's workers should be allowed to go inside the manhole.

If it is found that any unauthorized person (including contractor's workers without valid entry permit) has entered the manhole and injured or died, the contractor will be solely and fully responsible for the consequences including damages etc. claimed by the person or his heirs.

- (8) Even though the contractors take all the precautionary measures and by chance any workman is injured or dies due to negligence or otherwise the contractor will be responsible for the claims of damages by the workman or his heirs.

11 Submittals and Technical Schedules

Submittals:

To ensure compliance with the requirements specified in the Contract, the contractor shall make a number of submittals as described in the following clauses to the Engineer for approval by the specified time. The contractor shall ensure that the submittals prepared are of good professional standard, comply with all the requirements specified in the contract and complete with all details and information to enable the Engineer to evaluate and approve the submission. It shall be clearly understood by the contractor that he shall not commence any work without the approval of the submittals by the Engineer.

Submittals by the Contractor shall, interalia, include:

11.1 Submittal on Method of Work

The submittal on method of work shall explain in details the various steps involved in the rehabilitation process and shall include the flow management, desilting, pipe preparation, supply and installation of liner, lateral reinstatement, CCTV inspection and manhole repairs, trenching and excavation of pits, picking up and diversion of body connection to the nearest manhole, etc.

Submittal should also include details of repair procedures if the sewer is damaged during desilting, installation, CCTV inspection. Any other details specific to the proposed lining system shall also be included. It shall also contain a detail section on remedial measures in case the installation method fails for any reason.

The Contractor shall submit a comprehensive procedure of rescue/remedial measures to be adopted by him in case of failure of the liner at any stage. The procedure submitted must include a minimum of following:

1. The Rescue/Remedial measures to be adopted in case of failure of the liner during installation stage.
2. The Rescue/Remedial measures to be adopted in case of a failure of the liner during testing/quality control stage.

The Contractor shall submit the detailed plan at the bidding stage. The Contractor shall be solely responsible for remedial measures and re-installation and restoration of the sewage flow. All Such measures shall be entirely at the risk and cost of the contractor.

The bidder shall submit power point presentation of the technology, methodology of installation , etc. offered by them for executing the work of rehabilitation in CD/DVDs.

The bidder shall submit the above details in **Technical Schedule 11.1** along with the bid.

11.2 Submittal on Design Procedure and Calculations

The bidder shall submit detail design procedure and calculations (for each stretch of sewer under the scope of work) for the liners as per the technical specifications as Structural Standalone Type II liners in this schedule.

Bidder shall note that,

- a) All materials, sealants, adhesive, etc. must have a proven track record of use in sewer rehabilitation works.
- b) The bidder should give complete design procedure and calculations (short term and long term) for the proposed rehabilitation work in this schedule.
- c) The contractor shall also submit flow calculation with the proposed liner in this schedule
- d) The Standard Dimension Ratio (SDR) shall be chosen in such a way that the resulting thickness of pipe shall meet the design calculation as a Structural standalone type II pipe.
- e) The liner thickness shall be determined in accordance with relevant WRc or ASTM standards for structural design considerations. (i.e. for Fully deteriorated pipe condition). WRc / CPHEE manuals can be referred for design of liners.
- f) The liner design shall be carried out considering hydrostatic loading, soil loading and traffic loading acting together on the sewer.
- g) Unless otherwise specified all design calculations shall assume minimum factor of safety of 2 and a minimum factor of safety of 2.5 shall be assumed for buckling check.
- h) The life of the installed pipe system shall be minimum thirty (30) years under live sewer conditions
- i) The water table level for design purposes shall be considered at ground level. The design Head of water, therefore, shall be taken as equal to the depth of pipe invert level below ground level.
- j) The Contractor must produce documentary evidence in this schedule to substantiate that the system he offered shall have minimum thirty (30) years of service life.
- k) The design of liner shall be carried out as follows:

Along with the tender in Packet 'A' and 'B' by all bidders:

The design of liner shall be carried out and approved by professional recognized organization / institution like WRC, I.I.T., VJTI, Recognized Engineering Institutions or by Chartered Engineer having particular experience in liner design and structural assessment of sewers of similar nature and complexity to the project

At the time of execution by the successful bidder:

The design of liner shall be carried out and approved by professional recognized organization / institution like WRC, I.I.T., VJTI, Recognized Engineering Institutions having particular experience in liner design and structural assessment of sewers of similar nature and complexity to the project.

The bidder shall submit the above details in **Technical Schedule 11.2** along with the bid.

11.3 Durability Performance Data

The bidder shall submit the durability performance data of the proposed liner in **technical Schedule 11.3** along with the bid.

11.4 Bidder's Proposed Liner Thickness & Cross Section Area Reduction

The bidder shall submit the details of proposed liner thickness and cross section area reduction for each stretch of sewer under the scope of work in **technical Schedule 11.4** along with the bid.

11.5 Bidder's Track Record on the application of proposed Lining System.

Bidder shall submit the Data for the works of rehabilitation of sewers carried out using proposed methodology as submitted for qualifying the post qualification criteria in **Technical Schedule 11.5** along with the bid. Use separate sheet for each project.

11.6 Bidder's Track Record

Bidder shall submit the details of successfully completed rehabilitation works carried out during last 07 years using trenchless technology for non man entry sewers using any technology and / or proposed technology for the purpose of technical evaluations in **Technical Schedule 11.6**.

The data submitted shall be substantiated with the relevant work orders and completion certificated issued,

11.7 Work Schedule

The bidder shall submit Work Schedule showing the time within which various significant activities of the work will be executed and completed as **Technical Schedule - 11.7**.

The Contractor shall submit an overall baseline work schedule as per the specification. The programme shall form the basis of monitoring the Contractor's performance. Any deviations to the programme shall be reported to the Engineer and adequate reasons shall be given for the deviation. The programme will form a yard stick to measure the Contractors' performance.

The program shall be based on Microsoft project/PERT/CPM or any other suitable work scheduling programs. The activities shall be clearly identified and suitably linked into the programme.

11.8 Bidder's Declaration

The bidder shall submit the declaration in **technical Schedule 11.8** along with the bid.

11.9 Submittal on Quality Assurance

The Contractor's Quality Assurance Manual for the Works shall be submitted to the Engineer for his endorsement within fourteen (14) days of the Date of Letter of Acceptance. The Quality Assurance Programme shall be maintained in accordance with the provision of the manual. No works shall commence until the Quality Assurance Manual has been endorsed by the Engineer.

The Contractor's Quality Assurance System shall incorporate but not be limited to the following:

- a. The Quality Assurance and Quality Control procedures covering all material design. Manufacture, supply and installation carried out by the Contractor and any of his sub-contractors.
- b. Such tests necessary to demonstrate that materials comply with the requirements of this specification and the requirements of the relevant Standards and Codes as described in the specification.

11.10 Submittal on Traffic Management Plan

The Contractor shall implement a comprehensive traffic management plan. The contractor will be required to arrange the work sites and order of working in or along carriageways to minimize the interference with the free flow of traffic and shall take all measures and precautions required by the traffic police and road authorities and the Engineer for the safety and convenience of traffic.

The worksite must be arranged in length to be consistent with good progress in laying the sewers and sufficient distance between work sites must be maintained to ensure the free flow of road traffic. The contractor must provide and maintain at each work site proper and

efficient automatic lights operating day and night for the full duration of his occupancy of the roads.

The Contractor shall also submit a comprehensive traffic management plan for a particular site at least 14 days prior to commencing each work for Engineer's approval.

In case any of the Authorities require a presentation on traffic management or work execution plan, the Contractor will have to submit the same to the Engineer at least 7 days prior to such presentation and on approval of the plan by the Engineer he shall submit/present it to the concerned authorities.

Technical Schedules:

The bidder shall fill all the following Technical Schedules and upload the same in Packet – B along with the bid. Non-compliance of this requirement may lead to disqualification. If required the bidders may be asked to substantiate the claims made by them in the Technical schedules, failing which they may be disqualified.

Technical Schedule 11.1 – Methodology of Work

The bidder shall submit in detail methodology for the following activities of the work as per submittal 11.1.

- (a) Preparatory works including Isolation / plugging of sewerline and flow diversion by pumping arrangement or by stanching.
- (b) Desilting and transportation of silt to dumping ground.
- (c) Pre and post rehabilitation CCTV survey
- (d) Taking pits for accessing sewerline and taking trenches for diversion of sewage flow and for diverting body connection to the nearest manhole.
- (e) Design, manufacture, supply, delivery at site and installation of proposed structural lining system.
- (f) Diverting body connection to the nearest manhole
- (g) Manhole Repairs
- (h) Construction of new manholes

The methodology for lining system shall contain the following details.

- (1) Name and Description of the Lining Method.
- (2) Method of design and manufacture of Lining System.
- (3) Method of installation including manpower, plant and equipment to be used for installation.
- (4) Comment on ability of the liner to meet the bending radius requirements for the sewers.
- (5) Method to handle any irregularities of the internal geometry of sewers (e.g. bends, localized reduction in diameter and ovalisation of pipe)
- (6) Methods used for preparation of the surface of the existing conduit prior to rehabilitation.
- (7) Methodology to handle and attend any emergency like collapse of sewerline.
- (8) The Rescue/Remedial measures to be adopted in case of failure of the liner during installation stage.
- (9) The Rescue/Remedial measures to be adopted in case of a failure of the liner during testing/quality control stage.
- (10) Any other relevant details.

Technical Schedule 11.2 - Design Procedure & calculations for Lining Thickness

The bidder shall submit design procedure and calculations (for each stretch of sewer under the scope of work) for the liners as per the technical specifications as Standalone Type II liners in this schedule as per submittal 11.2

Technical Schedule 11.3 – Durability Performance Data

The bidder shall submit the details of the proposed liners as per submittal 11.3 in this schedule.

Sr. No.	Requirements	Details to be filled by Bidder
1	Liner (pipe) Commercial name	
2	Liner Technical name/ Profile designation	
3	Whether reinforced with any other material.	
	If yes, details	
4	Liner (pipe) Safety Data Sheet	
5	Liner Internal Wall Colour	
6	Liner Manufacturer Name & Address	
7	Liner History of use in sewer conditions (Documentary proof shall be attached)	
8	Availability of in house test data by Manufacturer (Yes/No)	
	If yes, Description of Data submitted with the bid.	
9	Availability of test data by independent testing institutions (Yes/No)	
10	If yes, Description of Data submitted with the bid.	
11	Joint details (a) Type of Joint (b) Sealing arrangement	

Sr. No.	Requirements	Details to be filled by Bidder		
12	As installed Liner (pipe) properties (as used in the Contract and as applicable)	Tensile Strength (MPa)	=	_____
		Tensile Modulus (MPa)	=	_____
		Compressive Strength	=	_____
		Flexural Strength (MPa)	=	_____
		Flexural Modulus (MPa)	=	_____
		Ring Stiffness	=	_____
		Barcoal Hardness	=	_____
		Abrasion Resistance	=	_____
		Elongation	=	_____
		Acid Value	=	_____
		Corrosion Resistance	=	_____
		Coefficient of Thermal Expansion	=	_____
		Max, allowable long term strain (%)	=	_____
		Poissons Ratio	=	_____
		Any other property	=	_____
13	Change in Engineering properties of as installed Liner	Tensile Strength	Tensile Modulus	Flexural Strength
	In 5 years			
	In 10 years			
	In 30 years			
14	Change in Engineering properties of as installed Liner	Flexural Modulus	Stiffness	Abrasion resistance
	In 5 years			
	In 10 years			
	In 30 years			
15	Change in Engineering properties of as installed Liner (pipe)	Chemical & Corrosion resistance	Integrity of Jointing	Long term Engineering properties (any other)
	In 5 years			
	In 10 years			
	In 30 years			
16	Technical Publication(s)			

Note:

The above data shall be substantiated with documents/independent test reports/client appraisal report/in house testing reports / technical reports etc.

Technical Schedule 11.4 – Bidder's Proposed Liner Thickness & Cross Section Area Reduction

The bidder shall submit the details of proposed liner thickness and cross section area reduction in the following proforma for each stretch of sewer under the scope of work as per submittal 11.4.

Sr. No.	Name of Road	Pre Rehabilitated Sewer				Loadings			Post Rehabilitated Sewer				% Change in Cross sectional Area	% Change in Flow
		Internal Dia (mm)	Cross Sectional Area (mm ²)	Depth to Invert (m)	Flow in M3/Hr	Soil Load (KN/m)	Live Load (KN/m)	Hydrostatic Load (KN/m)	As installed liner thickness (mm)	Internal Dia of rehabilitated sewer (mm)	Cross Sectional Area (mm ²)	Flow in M3/Hr		
1.														
2.														
3.														
...														

Technical Schedule 11.5 – Bidder’s Track Record on the application of proposed Lining System.

Bidder shall submit the Data for the works of rehabilitation of sewers carried out using proposed methodology in this schedule as submitted in the post qualification criteria, use separate sheet for each project.

Sr. No.	Description	Details to be filled by Bidder
1	Project Details (in India or in abroad) :	
	Contract name :	
	Contract Address :	
	Contract Value :	
	Contract stipulated & actual completion period :	
	Size of Sewer(s) rehabilitated :	
	Length of Sewer(s) rehabilitated :	
2	Client’s Details	
	Name :	
	Official Contact Address with Telephone, Facsimile and E-mail address :	
	Copy of the Completion Certificate (If Contract was abandoned in between then the reason for same) :	
	Reason(s) for delay, if any :	
	Litigation history in respect of said project (if applicable) :	
3	Product name and description of the lining system used in the Contract :	
4	How long the said lining system is in use in the market	
5	Whether the Liner used for structural rehabilitation of sewer(s) of similar nature and complexity	
6	Design Philosophy/Guidelines and Standards (WRC/ASTM/EN/WIS etc) & structural condition adopted for design of Liner (pipe) :	
7	Test methods along with relevant standards used to obtain the each material property value as stated above.	
8	What is the cross sectional area achieved (Increase or decrease in %age) :	
9	In case of projects in India, provide details of test laboratories where tests were conducted :	
10	Any other relevant data :	

Technical Schedule 11.6 – Bidder's Track Record

Bidder shall submit the details of successfully completed rehabilitation works carried out during last 07 years using trenchless technology for non man entry sewers using any technology and / or proposed technology for the purpose of technical evaluations in the following Proforma as per submittal 11.6.

The data submitted shall be substantiated with the relevant work orders and completion certificated issued,

Sr. No.	Name of the project	Name of the Employer	Size of the sewer Rehabilitated	Length of the sewer rehabilitated	Rehabilitation Technology used	Copy of Work Order & Completion Certificate
1						
2						
3						
4						
5						
...						

TECHNICAL SCHEDULE - 11.7

Work Schedule

(To be submitted by the Bidder with details as mentioned in Submittal - 11.7)

Technical Schedule 11.8 – Bidder's Declaration

We,

1. Confirm that if the proposed thickness of the liner as submitted in this Bid is found to be inadequate during the detailed design stages, the thickness required as per the design calculations shall be provided (subject to minimum thickness requirements) without any variation of bid price or substance of the Bid. If found to be adequate, the thickness will remain as that proposed in our bid.
2. Confirm that all construction and physical site conditions for installing the liner have been understood and adequate provision in this Bid Price has been made to overcome such site conditions without any variation to the Bid Price or substance of the Bid
3. Confirm that any conflict or ambiguity in the Bid Documents has been satisfactorily clarified by BMC and that the documents have been understood and all works required for successful completion of the contract works have been identified and included in the Bid Price. No claim or variation of The Bid Price will be sought based on any conflicting clauses or ambiguity in these documents.
4. Confirm that we will commit sufficient resources to complete the works in the stipulated Time for Completion.

Name of Authorised Signatory:

(To be signed by all the partners case of a Joint Venture)

Signed:

Title:

Bidder's Name and Seal:

Date:

12 TECHNICAL EVALUATION MATRIX

Particulars of marks which shall be accorded for technical evaluation are given below. **The minimum qualifying marks are 60.** Bidders should note that the bids not securing minimum qualifying marks (i.e. 60 Marks) shall be treated as non-responsive.

Sr. No	Description		Marks	
1	Total length of Non Man Entry rehabilitation experience involving proposed technology for the subject bid in last seven years executed by the bidder	Up to 3000 m	2	10
		Above 3000 m up to 6000 m	4	
		Above 6000 m up to 8000 m	8	
		Above 8000 m	10	
2	Total length of Non Man Entry rehabilitation experience involving any technology in last seven years executed by the bidder.	Up to 7000 m	2	10
		Above 7000 m up to 15000 m	4	
		Above 15000 m up to 25000 m	8	
		Above 25000 m	10	
3	No of years in business of manufacturer involved using proposed technology for the subject bid.	Up to 5 years	1	5
		Above 5 up to 15 years	3	
		Above 15 years	5	
4	No of years in business of bidder involved using proposed technology for the subject bid.	Up to 5 years	1	5
		Above 5 up to 15 years	3	
		Above 15 years	5	
5	Availability of rehabilitation key equipment sets , required for preparation and installation of liner by proposed technology.	One Set	2	5
		Two Sets	3	
		Three Sets & above	5	
	Note : The key equipment set includes equipments e.g. but not limited to liner laying / installation equipment, curing equipment, grouting equipment, etc. as may be required for the proposed lining technology. Proof of ownership, lease / possession agreement is compulsory and shall be submitted along with bid. Key Equipment Sets without documentary proof will not be considered for evaluation.			
6	Percentage Reduction in area of cross section of host sewer by (for 600 mm dia.)	Above 13 up to 15%	2	5
		Above 10 up to 13%	3	
		Equal to and below 10%	5	
7	Percentage Reduction in area of cross section of host sewer by (for 700 mm dia.)	Above 13 up to 15%	2	5
		Above 10 up to 13%	3	
		Equal to and below 10%	5	

8	Percentage Reduction in area of cross section of host sewer by (for 750 mm dia.)	Above 13 up to 15%	2	5
		Above 10 up to 13%	3	
		Equal to and below 10%	5	
9	Percentage Reduction in area of cross section of host sewer by (for 800 mm dia.)	Above 13 up to 15%	2	5
		Above 10 up to 13%	3	
		Equal to and below 10%	5	
10	Percentage Reduction in area of cross section of host sewer by (for 900 mm dia.)	Above 13 up to 15%	2	5
		Above 10 up to 13%	3	
		Equal to and below 10%	5	
Note :- Percentage Reduction in cross sectional area above 15% is not allowed for 600 mm, 700mm, 750mm, 800mm & 900 mm dia. sewer and the corresponding offer will be rejected out rightly (Bidders shall submit detail calculation for reduction in cross section area)				
11	Percentage increase in Flow Capacity of rehabilitated sewer (600 mm dia.)	Up to 15 %	1	3
		Above 15 up to 25%	2	
		Above 25%	3	
12	Percentage increase in Flow Capacity of rehabilitated sewer (700 mm dia.)	Up to 15 %	1	3
		Above 15 up to 25%	2	
		Above 25%	3	
13	Percentage increase in Flow Capacity of rehabilitated sewer (750 mm dia.)	Up to 15 %	1	3
		Above 15 up to 25%	2	
		Above 25%	3	
14	Percentage increase in Flow Capacity of rehabilitated sewer (800 mm dia.)	Up to 15 %	1	3
		Above 15 up to 25%	2	
		Above 25%	3	
15	Percentage increase in Flow Capacity of rehabilitated sewer (900 mm dia.)	Up to 15 %	1	3
		Above 15 up to 25%	2	
		Above 25%	3	
Note :- Percentage increase in flow capacity for 600 mm, 700mm, 750mm, 800mm & 900 mm dia. sewer line shall not be less than 15, else the corresponding offer will be rejected out rightly. (Bidders shall submit detail calculation for increase in Flow Capacity)				
16	Relative abrasion resistance properties of liner material in terms of Relative Weight Loss of liner material as per values given in WRC manual.	Above 7 up to 10	5	10
		Above 4 up to 7	7	
		Equal to and below 4	10	

17	Excavation / Breaking of top portion of manhole or at bedding or benching, required for Pipe/Liner insertion	Excavation / Breaking of top portion of manhole or at bedding or benching, required for Pipe/Liner insertion	2	5
		No Excavation / Breaking of top portion of manhole or at bedding or benching, required for Pipe/Liner insertion	5	
18	Liner type	Laying of discrete pipes/liners with interlocking arrangement	1	5
		Laying of continuous liner/pipe with interlocking strips	3	
		Laying of continuous liner/pipe (non discrete pipe, without interlocking)	5	
19	Ability to lay continuous liner / pipe	Laying of discrete pipes/liners with interlocking arrangement or Laying of continuous liner/pipe (non discrete pipe), at a stretch less than 30 Mtrs.	1	5
		Laying of continuous liner/pipe (non discrete pipe), at a stretch of 30 to 60 Mtrs.	2	
		Laying of continuous liner/pipe (non discrete pipe), at a stretch of 60 to 90 Mtrs.	3	
		Laying of continuous liner/pipe (non discrete pipe), at a stretch of 90 Mtrs. and above	5	
Technical Score :				100

Note:

1. Documentary evidence shall be submitted along with the bid in support of information required in Technical Evaluation Matrix.
2. Bidders are requested to note that any false information submitted for technical evaluation matrix will lead to rejection of proposal outrightly.

SELECTION OF MATERIAL

1. All materials brought on the site of work and meant to be used in the same, shall be the best of their respective kinds and to the approval of the Engineer. The Engineer or his representative will accept that the materials are really the best of their kinds, when it is proved beyond doubt that no better materials of the particular kind in question are available in the market.
2. The contractor shall obtain the approval of the Engineer of samples of all materials to be used in the works and shall deposit these samples with him before placing an order for the materials with the suppliers. The materials brought on the works shall conform in every respect to their approved samples. Fresh samples shall be deposited with the Engineer whenever the type or source of any material changes.
3. The contractor shall check each fresh consignment of materials as it is brought to the site of works to see that they conform in all respects to the Specifications of the samples approved by the Engineer, or both.
4. The Engineer will have the option to have any of the materials tested to find out whether they are in accordance with the Specifications and the Contractor will bear all expenses for such testing. All bills, vouchers and test certificates, which in the opinion of the Engineer or his representative are necessary to convince him as to the quality of the materials or their suitability shall be produced for his inspection when required.
5. Any materials that have not been found to conform to the specifications will be rejected forthwith and shall be removed from the site by the contractor at his own cost within 24 hours.
6. The Engineer shall have power to cause the Contractors to purchase and use such materials from any particular source, as may in his opinion be necessary for the proper execution of the work.
7. Notwithstanding the source, the sand shall be washed using sand washing machine before use.

SECTION 12

FRAUD AND

CORRUPT PRACTICES

FRAUD AND CORRUPT PRACTICES

- The Applicants and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process. Notwithstanding anything to the contrary contained herein, the Authority may reject an Application without being liable in any manner whatsoever to the Applicant if it determines that the Applicant has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process.
- Without prejudice to the rights of the Authority under relevant Clause hereinabove, if an Applicant is found by the Authority to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, such Applicant shall not be eligible to participate in any tender or RFQ issued by the Authority during a period of 2 (two) years from the date such Applicant is found by the Authority to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as the case may be.
- For the purposes of this Clause, the following terms shall have the meaning hereinafter respectively assigned to them:
 - A. **“corrupt practice”** means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process (for avoidance of doubt, offering of employment to, or employing, or engaging in any manner whatsoever, directly or indirectly, any official of the Authority who is or has been associated in any manner, directly or indirectly, with the Bidding Process or the LOA or has dealt with matters concerning the Concession Agreement or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the Authority, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process); **or**

save and except as permitted under the relevant sub clause, engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the LOA or after the execution of the Concession Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA or the Concession Agreement, who at any time has been or is a legal, financial or technical adviser of the Authority in relation to any matter concerning the Project;

- B. “fraudulent practice”** means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process;
- C. “coercive practice”** means impairing or harming or threatening to impair or harm, directly or indirectly, any person or property to influence any 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
- vii. acts intended to materially impede the exercise of the Financier’s inspection and audit rights provided .
- viii. “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.
- ix. “parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non-competitive levels.
- x. a “party” refers to a participant in the procurement process or contract execution.

SECTION 13
PRE BID MEEING

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.

Any queries or request for additional information concerning this TENDER shall be submitted by e-mail to eeepncme.so@mcgm.gov.in The subject shall clearly bear the following identification/ title: "Queries/ Request for Additional Information: TENDER for (Tender Subject). Any changes in mail ID will be intimated on the portal.

The queries shall be submitted in following proforma.

Sr. No.	Tenders section/ Clause reference	Provision in Tender clause	Query/ Clarification requested
1			
2			
...			

SECTION 14

LIST OF APPROVED BANKS

LIST OF APPROVED BANKS

1. The following Banks with their branches in Greater Mumbai and in suburbs and extended suburbs up to Virar and Kalyan have been approved only for the purpose of accepting Banker's guarantee from 1997-98 onwards until further instructions.
2. The Bankers Guarantee issued by branches of approved Banks beyond Kalyan and Virar can be accepted only if the said Banker's Guarantee is countersigned by the Manager of a branch of the same Bank, within the Mumbai Limit categorically endorsing thereon that said bankers Guarantee is binding on the endorsing Branch of the bank within Mumbai limits and is liable to be on forced against the said branch of the Bank in case of default by the contractor/supplier furnishing the bankers Guarantee.

3. List of approved Banks :-

A	S.B.I and its subsidiary Banks
1	State Bank Of India.
2	State Bank Of Bikaner & Jaipur.
3	State Bank Of Hyderabad.
4	State Bank Of Mysore.
5	State Bank Of Patiyala.
6	State Bank Of Saurashtra.
7	State Bank Of Travankore.
B	Nationalized Banks
8	Allahabad Bank.
9	Andhra Bank.
10	Bank Of Baroda.
11	Bank Of India.
12	Bank Of Maharashtra.
13	Central Bank Of India.
14	Dena Bank.
15	Indian Bank.
16	Indian Overseas Bank.
17	Oriental Bank Of Commerce.
18	Punjab National Bank.
19	Punjab & Sindh Bank.
20	Syndicate Bank.
21	Union Bank Of India.
22	United Bank Of India.
23	UCO Bank.
24	Vijaya Bank.

24A	Corporation Bank.
C	Scheduled Commercial Banks
25	Bank Of Madura Ltd.
26	Bank Of Rajasthan Ltd.
27	Banaras State Bank Ltd.
28	Bharat Overseas Bank Ltd
29	Catholic Syrian Bank Ltd.
30	City Union Bank Ltd.
31	Development Credit Bank.
32	Dhanalakshmi Bank Ltd.
33	Federal Bank Ltd.
34	Indsind Bank Ltd.
35	I.C.I.C.I Banking Corporation Ltd.
36	Global Trust Bank Ltd.
37	Jammu & Kashmir Bank Ltd.
38	Karnataka Bank Ltd.
39	KarurVysya Bank Ltd.
40	Laxmi Vilas Bank Ltd.
41	Nedugundi Bank Ltd.
42	Ratnakar Bank Ltd.
43	Sangli Bank Ltd.
44	South Indian Bank Ltd.
45	S.B.I Corporation &Int Bank Ltd.
46	Tamilnadu Mercantile Bank Ltd.
47	United Western Bank Ltd.
48	Vysya Bank Ltd.
D	Schedule Urban Co-op Banks
49	Abhyudaya Co-op Bank Ltd.
50	Bassein Catholic Co-op Bank Ltd.
51	Bharat Co-op Bank Ltd.
52	Bombay Mercantile Co-op Bank Ltd.
53	Cosmos Co-op Bank Ltd.
54	Greater Mumbai Co-op Bank Ltd.
55	Janata Sahakari Bank Ltd.
56	Mumbai District Central Co-op Bank Ltd.
57	Maharashtra State Co-op Bank Ltd.
58	New India Co-op Bank Ltd.
59	North Canara G.S.B. Co-op Bank Ltd.
60	Rupee Co-op Bank Ltd.
61	Sangli Urban Co-op Bank Ltd.
62	Saraswat Co-op Bank Ltd.
63	ShamraoVithal Co-op Bank Ltd.
64	Mahanagar Co-op Bank Ltd.

65	Citizen Bank Ltd.
66	Yes Bank Ltd.
E	Foreign Banks
67	ABM AMRO (N.Y.) Bank.
68	American Express Bank Ltd.
69	ANZ Grindlays Bank Ltd.
70	Bank Of America N.T. & S.A.
71	Bank Of Tokyo Ltd.
72	Bank indo suez.
73	Banque Nationale de Paris.
74	Barclays bank.
75	City Bank N.A.
76	Hongkong & Shanghai banking Corporation.
77	Mitsui Taiyokbe Bank Ltd.
78	Standard Chartered Bank.
79	Cho Hung Bank.

4. **For more details, Refer Circular under no. CA/FBK/39 dated 07.12.2012, CA/FBK/25 dated 30.10.2014 & CA/FBK/241 dated 27.11.2019 regarding list of approved banks for acceptance of Bankers Guarantee annexed in the tender document.**

SECTION 15
APPENDIX

FORM OF TENDER

To,
The Municipal Commissioner,
Brihanmumbai Municipal Corporation

Sir,

I/ We have read and examined the following documents relating to the work/supply /construction of _____

- i. Notice inviting tender.
- ii. Directions to tenderers (General and special)
- iii. General condition of contract for Civil Works of the Brihanmumbai Municipal Corporation as amended up to date.
- iv. Relevant drawings.
- v. Specifications.
- vi. Special directions
- vii. A to H
- 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 contract of the rates entered in the schedule of rates sent herewith and signed by me/us. (Strike out the portions which are not applicable).
- 1B. I/We do 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 Mumbai Municipal Corporation Act, not to accept this tender.(Subject to condition 5 below).
5. I/We also agree to keep this tender open for acceptance for a period of 180 days from the date fixed for opening the same and not to make any modifications in its terms and conditions which are not acceptable to the Corporation.
6. I/We agree that the Corporation shall, without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely, if.
- a. I/We fail to keep the tender open as aforesaid.
 - b. I/We fail to execute the formal contract or make the contract deposit when called upon to do so.
 - c. I/we do not commence the work on or before the date specified by the Engineer in his work order.
7. I/We hereby further agree to pay all the charges of whatsoever nature in connection with the preparation, stamping and execution of the said contract.
8. I/We 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.....

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

1.
 2.
 3.
 4.
 5.

A/c No.
 Name of Bank
 Name of Branch
 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 Dy. Municipal Commissioner (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 Dy. Municipal Commissioner 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 AGREEMENT WITNESSETH as follows:-

- 1) In this agreement words and expressions shall have the same meanings as are respectively assigned to them in the General Conditions of Contract for works hereinafter referred to:-
- 2) The following documents shall be deemed to form and be read and constructed as a part of this agreement viz.
 - a) The letter of Acceptance
 - b) The Bid:
 - c) Addendum to Bid; if any
 - d) Tender Document
 - e) The Bill of Quantities:
 - f) The Specification:
 - g) Detailed Engineering Drawings
 - h) Standard General Conditions of Contracts (GCC)
 - i) All correspondence documents between bidder and BMC
- 3) In consideration of the payments to be made by the Commissioner to the contractor as hereinafter mentioned the contractor hereby covenants with the Commissioner to construct, complete and maintain the works in conformity in all respects with the provision of the contract.
- 4) The Commissioner hereby covenants to pay to the Contractor in consideration of the construction, completion and maintenance of the works the contract sum, at times and in the manner prescribed by the contract.

IN WITNESS WHERE OF the parties hereto have caused their respective common 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

.....
.....

Trading under the name and style of
Contractors

Full Name & Address.....

.....

Dy.Ch.E. (S.O.) P&C

Ch.E. (S.O.)

Signed by the Dy. Municipal Commissioner

in the presence of

.....
.....

Deputy Municipal Commissioner

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.

1.

2.

2.

And in the presence of the Municipal Secretary

Municipal Secretary

ANNEXURE - A

Name of work / ~~supply~~ : Rehabilitation of 600 mm to 900 mm diameter sewer lines by trenchless technology

The Engineer for this work :

Chief Engineer.....	Chief Engineer (Sewerage Operations)
Dy.Ch. Engineer	Deputy Chief Engineer (Sewerage Operation) Planning & Construction
Executive Engineer	Executive Engineer (Sewerage Operation) Planning & Construction

1. Estimated cost of Tender:

Rs.

2. Earnest Money (1% of the Estimated cost) :

3. Time Period :

1.	Contract as a whole Period completion	12 Months Excluding Monsoon
2.	Part or Groups of items	
	i)	i)
	ii)	ii)
	iii)	iii)

4. Percentage to be charged as supervision charges for the work got executed through other meanspercent.

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.

5. 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.

6. In case of lump sum contract the cost of the work actually carried out as per break up and programme of the work and the schedule of payment included in the contract including cost of any excess and/or extra items, of the work, excluding the cost on account of water charges and sewerage charges and also excluding cost on account of price variation claims as provided in extra excess conditions as amended up to date.

Annexure - B

PRE-CONTRACT INTEGRITY PACT

(On Rs. 500/- Stamp Paper)

The Bidder commits himself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of his bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commits himself to the following :-

1. The Bidder will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BMC, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the Contract.
2. The Bidder further undertakes that he has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BMC or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the Contract or any other Contract with the Government for showing or forbearing to show favour or 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:

- i. “fraudulent practice” means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process ;
- ii. “coercive practice” means impairing or harming or threatening to impair or harm, directly or indirectly, any person or property to influence any persons participation or action in the Bidding Process;
- iii. “undesirable practice” means (i) establishing contact with any person connected with or employed or engaged by the Authority with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest; and
- iv. “restrictive practice” means forming a cartel or arriving at any understanding or arrangement among Applicants with the objective of restricting or manipulating a full and fair competition in the Bidding Process.

Signature of Tenderer/Bidder

Annexure - C
DECLARATION CUM INDEMNITY BOND

(On Rs. 500/- Stamp Paper)

I, _____ of _____, do hereby declare and undertake as under.

1. I declare that I have submitted certificates as required to Executive engineer (Monitoring) at the time of registration of my firm/company _____ and there is no change in the contents of the certificates that are submitted at the time of registration.
2. I declare that I _____ in capacity as Manager/Director/Partners/Proprietors of _____ has not been charged with any prohibitory and /or penal action such as banning (for specific time or permanent) / de-registration or any other action under the law by any Government and/or Semi Government and/or Government undertaking.
3. I declare that I have perused and examined the tender document including addendum, condition of contract, specifications, drawings, bill of quantity etc. forming part of tender and accordingly, I submit my offer to execute the work as per tender documents at the rates quoted by me in capacity as _____ of _____.
4. I further declare that if I am allotted the work and I failed to carry out the allotted work in accordance with the terms and conditions and within the time prescribed and specified, BMC is entitled to carry out the work allotted to me by any other means at my risk and cost, at any stage of the contract.
5. I also declare that I will not claim any charge/damages/compensation for non availability of site for the contract work at any time.
6. I declare that I will positively make the arrangements of the required equipment on the day of commencement or with respect to the progress of the work in phases, as per the instructions of site in charge

Signature of Tenderer/Bidder

BANKERS GURANTEE IN LIEU OF CONTRACT DEPOSIT

THIS INDENTURE made this _____ day of _____ BETWEEN THE _____ BANK incorporated under the English/Indian Companies Acts and carrying on business in Mumbai (hereinafter referred to as 'the bank' which expression shall be deemed to include its successors and assigns) of the first part _____ inhabitants carrying on business at _____ in Mumbai under the style and name of Messer's _____ (hereinafter referred to as 'the consultant') of the second part Shri. _____ THE MUNICIPAL COMMISSIONER FOR GREATER MUMBAI (hereinafter referred to as 'the commissioner' which expression shall be deemed, also to include his successor or successors for the time being in the said office of Municipal Commissioner) of the third part and THE BRIHANMUMBAI MUNICIPAL CORPORATION (hereinafter referred to as 'the Corporation') of the fourth part WHEREAS the consultants have submitted to the Commissioner tender for the execution of the work of “ _____ ” and the terms of such tender /contract require that the consultants shall deposit with the Commissioner as/contract deposit/ earnest money and /or the security a sum of Rs. _____ (Rupees _____)

AND WHEREAS if and when any such tender is accepted by the Commissioner, the contract to be entered into in furtherance thereof by the consultants will provide that such deposit shall remain with and be appropriated by the Commissioner towards the Security deposit to be taken under the contract and be redeemable by the consultants, if they shall duly and faithfully carry out the terms and provisions of such contract and shall duly satisfy all claims properly chargeable against them there under AND WHEREAS the consultants are constituents of the Bank and in order to facilitate the keeping of the accounts of the consultants, the Bank with the consent and concurrence of the consultants has requested the Commissioner to accept the undertaking of the Bank hereinafter contained, in place of the contractors depositing with the Commissioner the said sum as earnest money and /or security as aforesaid AND WHEREAS accordingly the Commissioner has agreed to accept such undertaking NOW THIS AGREEMENT WITNESSES that in consideration of the premises, the Bank at the request of the consultants (hereby testified) UNDERTAKES WITH the commissioner to pay to the commissioner upon demand in writing , whenever required by him , from time to time , so to do , a sum not exceeding in the whole Rs. _____ (Rupees _____) under the terms of the said tender and /or the contract .The B.G. Is valid up to _____ ” Notwithstanding anything what has been stated above, our liability under the above guarantee is restricted to Rs. _____ only and guarantee shall remain in force up to _____ unless the demand or claim

under this guarantee is made on us in writing on or before _____ all your right under the above guarantee shall be forfeited and we shall be released from all liabilities under the guarantee thereafter”

IN WITNESS WHEREOF

WITNESS (1) Name and address		
WITNESS (2) Name and address		the duly constituted Attorney Manager
the Bank and the said Messer’s (Name of the Bank)		
WITNESS (1) Name and address		
WITNESS (2) Name and address		
For Messer’s Address		

have hereinto set their respective hands the day and year first above written.

The amount shall be inserted by the Guarantor, representing the Contract Deposit in Indian Rupees.

Annexure - D

Rate Analysis

Item Description :

Sr. No.	Description of rate analysis Parameters	Unit	Quantity	Rate	Amount
1	Basic Material (Rate should be inclusive of all taxes)				
2	Machinery Hire Charges				
3	Labour Type		(labour components)		
4	Total of all components				
5	Overhead & Profit 15% on 4				
6	Total Rate (4+5)				
7	Per unit rate				

Sign & Seal of the Tenderer

Annexure - E
Undertaking for best price

(As per circular u/no. DMC/CPD/OD/15 Dtd. 06.05.2013, to be uploaded in folder 'A')

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

Tender / Tender No. _____

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 hereby 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 upto - 50% or + 10 % at a price lower than that offered in the present tender 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**

Annexure - F

INFORMATION REGARDING STATUS OF BIDDER

- (1) (a) Whether it is a proprietor concern -----
- (b) If so, name of the owner -----
- (2) If it is a partnership concern, please furnish name of each partner and copy of registration certificate -----
- (3) In case of company, please furnish the documentary proof to show that the company is registered. -----
- (4) In case of Joint Venture, please furnish the name of each firm and Joint Venture forms. -----

**Signature of authorized
Person of concern/company**

Name of concern/company and seal

Annexure-G

MANUFACTURERS AUTHORISATION CERTIFICATE

(In case of tenderer who are authorized representative of manufacturer)
(to be submitted on Letter head of Manufacturer along with packet A/B)

This is to certify that M/s..... are Authorized
Representative of
since..... till date for dealing in
.....

We authorize them to quote for the tender
..... bearing
no..... to be submitted on..... and also promise to provide
all the necessary technical support & after sales service during the contract period and
afterwards.

Place : Seal of the Manufacturer & Sign of
Authority signatory

Date :

Annexure –H

FORMATS FOR JOINT VENTURES

1. POWER OF ATTORNEY FOR LEAD PARTNER

TO BE EXECUTED BY ALL MEMBER PARTNERS IN CASE OF JOINT VENTURE

(On Non – judicial stamp paper of Rs. 500 duly attested by notary public)

Whereas the Brihanmumbai Municipal Corporation (BMC) has invited bids for _____ (name of the work). Whereas, M/s _____, M/s _____ and M/s _____ (the respective names of the members of the Joint Venture along with address of their registered offices) have formed a Joint Venture and are interested in bidding for the above mentioned work in accordance with the terms and conditions of the tender/contract and Whereas, it is necessary for the partners of the Joint Venture to designate one of them as the Lead Partner with all necessary power and authority to do for and on behalf of the Joint Venture, all acts, deeds and things as may be necessary in connection with the Joint Venture's bid.

NOW THIS POWER OF ATTORNEY WITNESSETH THAT:

We, M/s _____ M/s. _____ and M/s _____ (the respective names of the members of the Joint Venture along with address of their registered offices) do hereby designate M/s _____ (name along with address of the registered office) being one of the partners of the Joint Venture, as the Lead Partner of the Joint Venture, to do on behalf of the Joint Venture, all or any of the acts, deed or things necessary or incidental to the Joint Venture's bid for the work, including submission of Proposal, participating in conference, responding to queries, submission of information/ documents and generally to represent the Joint Venture in all its dealings with BMC, any other Government Agency or any person, in-connection with Work until culmination of the process of bidding and thereafter till the Contract Agreement is entered into with BMC.

We here by agree to ratify all acts, deeds and things lawfully done by Lead Partner our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our afore said attorney.

Dated this _____ day of _____ 201_ .

[Executants(s)]

(To be executed by all the Partners of the Joint Venture)

Note:-

The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executants and when it is so required the same should be under common seal affixed in accordance with the required procedure.

Also wherever required, the executants should submit for verification the extract of the charter documents and documents such as resolution/ Power of attorney in favour of the person executing this Power of attorney for the designation of power here under on behalf of the Joint Venture.

2. POWER OF ATTORNEY TO A PERSON FOR SIGNING OF PROPOSAL

TO BE EXECUTED BY THE LEAD PARTNER IN CASE OF JOINT VENTURE
(On Non – judicial stamp paper of Rs. 500 duly attested by notary public)

Know all men by these presents, we _____ (name and address of the registered office) do hereby constitute, appoint and authorize Mr. / Ms. _____ R/o _____ (name and address of residence) who is presently employed with us and holding the position of _____ (designation) as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to the bid of the Joint Venture consisting of _____, _____ and _____ (please state the name and address of the members of the Joint Venture) for _____ (name of the work) including signing and submission of all documents and providing information/responses to Brihanmumbai Municipal Corporation (BMC), representing us in all matters in connection with our bid for the said work.

We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

For

(Signature)

(Name, Title and Address)

Accept

..... (Signature)

(Name , Title and Address of the Attorney)

Notes:

- i. To be executed by the Lead Partner in case of a Joint Venture.
- ii. The mode of execution of Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executants and when it is so required the same should be under common seal affixed in accordance with the required procedure

Also, wherever required, the executants should submit for verification the extract of the charter documents and documents such as a resolution / Power of attorney in favour of the Person executing this Power of Attorney for the delegation of power hereunder on behalf of the executants.

3. BOARD RESOLUTION FOR COMPANIES

3.1 FOR LEAD PARTNER

“RESOLVED THAT approval of the Board be and is hereby granted to join the Joint Venture with _____, _____ and _____ (name and address of the members of the Joint Venture) for submission of bid to BMC for _____ (name of the work)

“RESOLVED FURTHER THAT the “draft” Memorandum of Understanding (“MoU) to be entered into with the members of the Joint Venture (a copy where of duly initialed by the Chairman is tabled in the meeting) be and is hereby approved.”

“RESOLVED FURTHER THAT Mr. _____ (name), _____ (designation) be and is hereby authorized to enter into an MoU, on behalf of the company, with the members of the Joint Venture and to sign the form of Tender on behalf of the Joint Venture for submission of the bidding documents and execute a power of attorney in favour of the Company as Lead partner.”

3.2 FOR OTHER MEMBERS OF THE JOINT VENTURE

“RESOLVED THAT approval of the Board be and is hereby granted to join the Joint Venture with _____, _____ and _____ (name and address of the members of the Joint Venture) for submission of bid to BMC for _____ (name of the work)

“RESOLVED FURTHER THAT the “draft” Memorandum of Understanding (“MoU) to be entered into with the members of the Joint Venture (a copy where of duly initialed by the Chairman is tabled in the meeting) be and is hereby approved.”

“RESOLVED FURTHER THAT Mr. _____ (name), _____ (designation) be and is hereby authorized to enter into an MoU, on behalf of the company, with the members of the Joint Venture and to execute a power of attorney in favour of _____ (name of the Lead Partner of the Joint Venture) to act as the Lead Partner of Joint Venture.”

4. LETTER OF COMMITMENT

(Each member of a Joint Venture has to submit a letter of commitment)

Date:

Place:

To

The Municipal Commissioner

Brihanmumbai Municipal Corporation

Dear Sir,

Subject: _____ (name of the work)

This has reference to the Bid being submitted by _____
(mention the Lead Partner of the Joint Venture), as Lead Partner of the Bidding Joint
Venture comprising _____,
and _____ (mention name(s) of the Partners) in respect of
_____ (name of the work) in response to
the e-tender notice issued by the BMC dated _____, 201_.

We hereby confirm the following.

We _____ (name of the Key Person), have examined in detail and
have understood and satisfied ourselves regarding the contents mainly in respect of the
following.

The bid documents published by BMC;

All subsequent communications between BMC and the Joint Venture, represented by
_____ (name of the Lead Partner in case of a Joint Venture);

The MoU signed between/among _____ (name(s) of partners); and

The bid being submitted by _____ (name of the Joint Venture).

We have satisfied ourselves regarding our role in the MOU. If
_____ (name of the Joint Venture) is awarded the
work/contract, we shall perform our role as outlined in the bid documents to the best of our
abilities.

The nature of our legal relationship with the Lead Partner of the Joint Venture, is specified in the bid documents, as per the requirements stated in the bid Documents.

We undertake to support _____ (name of the Lead Partner, for which the Letter of Commitment is being furnished) in respect of the roles as detailed in the MOU.

We therefore request BMC to consider our strengths, our experience, and our track record as specified in the bid documents pursuant to the conditions specified in the bid, for the purposes of evaluation.

We understand that no change in the partnership in the joint venture, in the role and form of responsibility of any partner shall be permitted after submission of the bid. If any change in partnership of the joint venture is done it would adversely affect the same.

For and on behalf of

Signature

(Authorized Representative and Signatory)

Name of the Person :

Designation :

5. JOINT VENTURE SUMMARY

Names of all partners of a joint venture:

1. Partner in charge (Lead Partner): _____
2. Member Partner: _____

Details of participation in the Joint Venture:

(Indicate responsibility and extent of participation as applicable in respect of finance planning, construction equipment, key personnel and execution of the work of the partner in charge of the joint venture and of each of the joint venture partners)

PARTICIPATION DETAILS	FIRM A (Lead Partner)	FIRM B (Member Partner)	FIRM C (Member Partner)
Finance (%)			
Planning			
Construction Equipment			
Key Personnel			
Execution of Work (Give details on contribution of each)			
Overall share in Joint Venture			

Signature of the Bidder along with stamp / seal

Annexure – I
TYPICAL CCTV SURVEY REPORT FORMAT

Project					
Name of the Road		Ward		Zone	
Sewer Line No		Upstream MH		Downstream MH	
Inspection Direction	In/ Against flow direction	Time of Start		Time of Completion	
CD No.		Name of CCTV Surveyor		Name of Supervisor	
Profile Shape	Circular/ Oval/ Rectangular	Width (mm)		Height (mm)	
Material of Construction	VC/ CO/ BR/ lining/ OTHER	Completion Plan no of BMC		Year of Construction	
Total Length Between End Points (m)		Surveyed length (m)		Depth @ u/s (m)	
				Depth @ d/s (m)	
Comment:					
Insp. Chainage	Time Code		Picture No	Description of Event	
00.00	230000		zzzz01	Start MH xxxxxxxx	
03.25	230200		zzzz02	Missing mortar @ 12 ^o Clock position	
11.45	230500		Zzzz03	Infiltration Gusher @ 4 ^o Clock position	
30.10	232200		Zzzz04	MH yyyyyyyy reached	

Hard copy CCTV inspection sheets to be maintained for each stretch between consecutive manholes for known manholes. In case of buried manholes appropriate noting shall be made.

The inspection length may differ from the real length.

Surveyed By :

Contractor's representatives

Engineers Representatives

Annexure – J : TYPICAL MANHOLE RECORD SHEET (NIS SHEET)

Network Information Sheet (NIS) FOR MANHOLE									
Nature of Work :							NIS No :		(Office use only)
Work carried on :	☐ MANHOLE	☐ RCM (Reconstruction)	☐ RTM (Repairs)	☐ RBM (Raising of buried)	☐ FMF (Fixing of Manhole Frame)	☐ FMC (Fixing of Manhole Cover)	☐ CNM (New Constrction)	OTHER (please specify)	
	☐ CHAMBER								
	☐ SEWERLINE	☐ RSL (Replacement/ Repairs)	☐ PSL (Providing and laying)	☐ ESL (Enlargement)	☐ PSLM (laying by microtunneling)	☐ MWSL (REHAB by MWSL)	☐ PBS (REHAB by Bursting)	OTHER (please specify)	
1) Ward :		2) Date of Completion/ Commissioning :			*Road Type :		☐ Concrete Road	☐ Paver Block Road	
3) Road Name:							☐ Mastic	☐ Asphalt Road	
4) Work Executing Agency:		Deptt. :		Contractor :					
5) P.O. NO		6) DLP (Defect liability end date)(dd-mm-yyyy)			*Status :		☐ Public	☐ Private	
7) Node : NODE NO :									
(I) Manhole :									
General	Manhole Depth (m)	* Manhole Shape		Cover Load Duty		Steps (Nos.)	*Const Code :		
		Conical	☐	Light	☐				
		Rectangular	☐	Medium	☐				
		Square	☐	High	☐				
Cover	Cover Dimensions (mm x mm)	*Cover Shape (C / R)	Hinged (Y/N)	Locked (Y/N)	Cover level (mTHD)	Catch Pit (Y/N) :			
		☐ Circular	☐ YES	☐ YES		☐ YES			
		☐ Rectangular	☐ NO	☐ NO		☐ NO			
(II) Incoming Pipe Details :									
Upstream Node Ref.(Node No/Private)	Connection Code Main(M)/ Street(P)	Pipe Shape Code Circular-C Rectangular- R Square -S ARCH -A Barrel -B Egg/Ovoid -E	Pipe Size (mm x mm)	* Material Code(VC/CO)	*Lining Material Code (UPVC/CIPP/GRP)	Depth from Cover (m)	Invert Level (mTHD)		
(III) Outgoing Pipe Details :									
Downstream Node Ref	Pipe Length (m)	*Pipe Shape Code	Pipe Size (mm x mm)	*Material Code	*Lining Material Code	Depth from Cover (m)	Invert Level (mTHD)		
(8) Cardinal Points :									
Point	Location / Landmark					Distance (m)			
1									
2									
3									
(9) Remarks / Additional Information:									
Contractor's Signature & Stamp					MCGM's authority's Signature & Stamp				

Annexure –K

CONFINED SPACE ENTRY PERMIT FORM

Date:

Work Shift: Day/Night

Name of the Work:	
Client: BMC	Zone/Ward:
Contractor:	

1. Site and Task Information

Section/Stretch Number and Name			
Upstream manhole No.		Downstream Manhole No.	
Designation	Name	Present (Y/N)	
Contractor's Site Engineer			
Contractor's Safety Officer/ Engineer			
Contractor's Site Supervisor			
Description of the work for which entry permit is sought :			

2. Emergency Standby Vehicle Check

Activity	Detail	Checked/Present
Vehicle Registration No.		
PUC valid (till)		
Vehicle fuel level		
Vehicle running condition		

Activity	Detail	Checked/Present
Driver's Name		
Driver's Mobile No.		Checked by calling
Driver instructed		
Nearest Hospital Details:		
Contact No. of Hospital :		
Driver must be instructed to be in the vehicle & be alert till the entire duration of the confined space activity. Driver must be instructed NOT to keep his mobile busy during the entire duration of the confined space activity.		

3. Air Quality Checks

Gas Checked (safe limit)	Before Ventilation			After Ventilation		
	Value	MH No.	Time	Value	MH No.	Time
Oxygen (19.5% to 23.5%)						
H ₂ S (max 10ppm)						
Flammable gases (max 5%LEL)						
Carbon Monoxide (max 30ppm)						
Others ()						

4. Gas Monitor Details

Name of Manufacturer	:	
Gas Monitor Serial Number	:	
Calibration Status	:	
Calibrated for the Gases	:	
Validity of Calibration	:	
Response test date for Gas Monitor	:	

5. Ventilation System

Ventilation System	:	Blower/Fan/any other specify_____
No of Equipments (Nos.)	:	
Capacity of System (HP)	:	
Installed at (Manhole No.)	:	
Flow Direction (In/out)	:	

6. Isolation of the Confined Space

Activity	Status (Y/N)
Plugging	
Stanching	
Sewage Flow Control /Pumping	
Harmful Substance Present	
Warning Signs/Notices/ Appliances in place	
Manhole Opened at (Time)	
Manhole properly barricaded	

7. Personnel Protective & Safety Equipment Checks

Equipment	Status	Quantity
Gas mask		
Breathing Apparatus		
Safety harness with rope		
Safety Shoes		
Safety Helmet with lamp		
Abrasion resistant hand gloves, Nose Mask		

Equipment	Status	Quantity
Protective Clothing		
Communication Device		
Winch Pulley System		
Rescue Equipment		
Ventilation Equipment		
Non Spark Torch		
First Aid Kit with medicines		
Any Other		

8. Other Safety Measures Checks

Safety Measure	Status (Y/N)
Area properly barricaded	
Manhole Jalis Provided	
Work in progress and other warning Signs	
No Smoking Warnings	
Any other	

9. Confined Space Entry Workers Information

Persons seeking entry into confined space			
Total number of persons (In words & numeral)		Tentative duration of stay in confined space	
Checked Vaccination status of all workers entering in confined space (YES/NO)			

10. Work Closure Checks

All equipment/ tools removed (YES/ NO)	
Obstructions removed and Flows restored (YES/ NO). If no; pl record reasons	
Manhole covers properly replaced and manholes securely closed (YES/ NO). If no; pl record reasons and measures taken for preventing mishap	
Site cleaned/ cleared (YES/ NO)	

11. Emergency Event Occurrence

Has any Event(s)/Emergency(s) occurred (Yes/No)	
If "YES" then, Nature of Event(s)/Emergency(s):	

This is to certify that the team entering in confined space is trained & briefed to work in the confined space and this confined space is safe for entry and carrying out of the task.

**Contractor's
Safety Officer/Engineer**

**Contractor's
Site Engineer**

Annexure 'L'

Irrevocable Undertaking

(on Rs. 500/- Stamp Paper)

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 to BMC 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, BMC 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 to penalty/ punishment or both as per the provision of GST Act.

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

Solemnly affirmed at

DEPONENT

This day of

BEFORE ME

Interpreted Explained and identified by me

Annexure– M
BRIHANMUMBAI MUNICIPAL CORPORATION

CIRCULAR U/No. MGC/F/6342 dated 5.5.2018

Sub.: Revised guidelines regarding barricades being used during the execution of various infrastructure development projects by BMC in Mumbai.

Various infrastructure development projects are being executed by BMC for the betterment of citizens of Mumbai. During the course of execution of the projects, it is necessary to provide strong and secured barricading as a safety measure to avoid any mishaps as well as to avoid nuisance to vehicular and pedestrian traffic. Nowadays, the following types of barricades are being used exclusively in BMC as per the convenience of various departments at different sites.

1. Water/s and tillable PVC Metro barricades.
2. RW7.45 (G.I. sheets of 22 gauge fixed on 3 inch dia. Wooden bullies buried in existing road sufficiently)
3. RW7.36 (G.I. sheets of 22 gauge fixed on MS Angle post buried in half the depth in drums of 20 litres capacity in 1:3:6 concrete).
4. Structural steel barricade for major trenches having depth more than 2.00 meters.

Thus from the above, it can be seen that there is no uniformity in provision of barricades as they are of different size and shape. Further it is also observed that the continuity is not maintained in providing the barricading keeping gaps in between thus endangering the safety of vehicular as well as pedestrian traffic. Also the barricades are not being cleaned, thus further adding to shabbiness. Further Mumbai being the financial capital of India, people from all over the world visit the city daily and to maintain good image of city the following decisions are taken.

- A) Only two type of barricades having department wise colour coding are proposed to be used depending upon the nature of work i.e. Minor and Major.
- (i) **Minor works:** Barricading made out of 1.5 mm thick MS plate fixed on M.S. angle post, V frame of 65 mm X 65 mm X 6 mm having height of 1.5m supported on as shown in Annex-1.
 - (ii) **Major works:** Structural steel barricade made out of 1.50 mm thick M. S. Plate ISMB 250, 1 SLC 250 X 50 mm and ISA 50mm X 50mm X 6mm having of size 2.5m X 2m as shown in Annex-11.
- B) The department wise colour coding for the barricading shall be as under:-
- (i) H.E. & W.S.P. department - **Blue**
 - (ii) Roads, Traffic, Bridges and Coastal Roads department- **Yellow**
 - (iii) S.P. & S.O department- **Green**
 - (iv) S.W.D., Building Maintenance department & for ward works - **Red**

- C) The basic principle behind installing secured and continuous barricading is to ensure the safety of vehicular as well as pedestrian traffic and residents in the nearby vicinity of the project. Due to non-installation of appropriate barricades on sites if any mishap occurs leading to injury or loss of life, then the contractor and contractor's Engineer in-charge will be liable for the consequent action.
- D) During the course of execution of project, if it is noticed that the contractor has not provided barricading then a penalty of Rs.1000/- per meter per day will be imposed upon the contractor and will be deducted from the due Bill. This penalty shall be apart of penalty as per tender condition.
- E) Details of the work shall be prominently displayed on the central panel of the barricades along-with the Social Slogans as given in Annexure-III and the Cycle of the same shall be maintained.
- F) The contractor shall provide and install the barricading along with the slogans printed as per the Annexure III, at his own cost and no payment will be made for this; however the contractor shall quote the bid accordingly by considering the cost of barricading. The condition shall be included in the tender as given below. "Barricading shall be provided free of cost as per Circular vide U/No.MGC/F/6342 dated 5.5.2018 and as per Annexure I, II and III of Standard drawings and specifications with slogans and department wise colour codes." The copy of circular will be attached to the tender as a part of tender document. This circular will be applicable for the new tenders proposed to be invited from 01.05.2018 and also the corrigendum shall be attached to tenders which are uploaded. However, for the projects wherein the tenders are already invited, the barricading shall be provided strictly as per tender condition. All the details (Annexure I, II & III of Standard drawings and specifications with slogans and department wise colour codes, sketches and department wise colour coding) are uploaded on BMC portal.

This circular shall come in force with immediate effect.

sd/- 20.4.2018
{Shri. V. P. Chithore)
Dir.(ES&P)

sd/-20.4.2018
(Shri. R. B. Bambale)
D.M.C.(S.E.)

sd/- 21.4.2018
{Shri. Vijay Singhal)
A.M.C.(E.S.)

sd/- 21.4.2018
(Dr. Shri. Sanjay Mukherjee)
A.M.C.(P.)

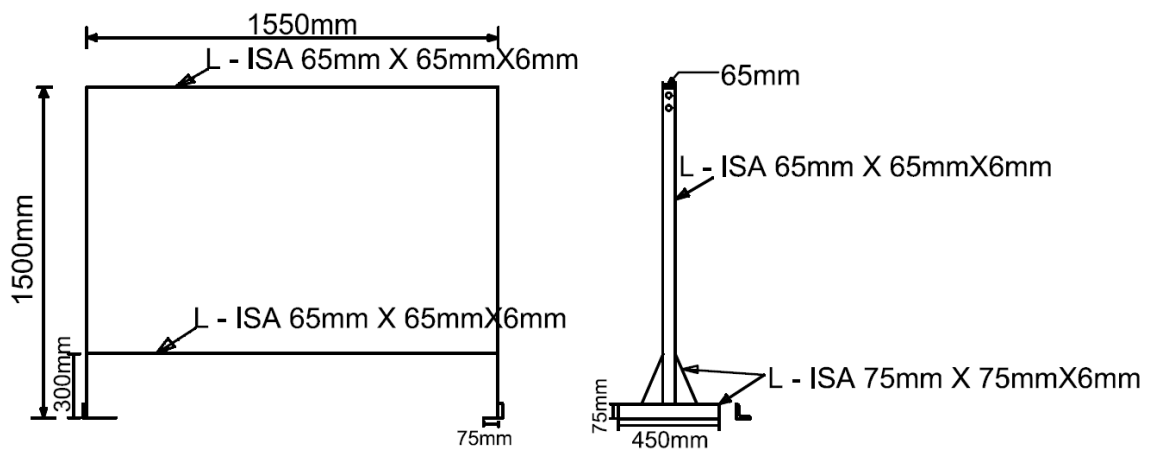
sd/-16.5.2018
(Shri. P. R. Kadam)
D.M.C.(S.E.)

sd/-16.05.2018
(Ajay Mehta)
M.C.

ANNEXURE I

A) Minor Work

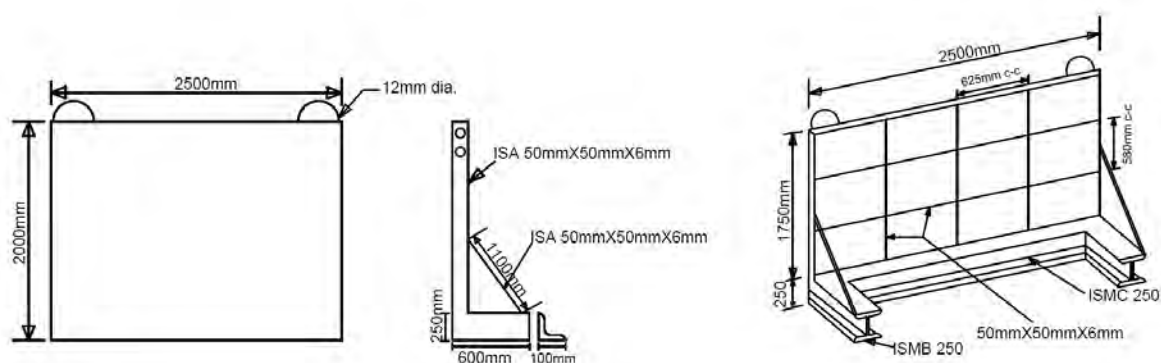
Providing, fabricating and installing the barricading made out of 1.5m high M.S. Angle post of 65mm x 65mm x 6mm with 1.5 mm thick M.S. Sheet of size 1.55m x 1.2m welded to the M.S. angle post/frames and fixed to 75mm x 75mm x 6mm angle base as shown in sketch for minor works, displaying of the social slogan as per the Annex-III, daily cleaning of the same to get better appearance and interlocking arrangement to ensure continuity in provision and to avoid gap in between etc complete and as directed by Engineer in-Charge.



ANNEXURE II

B) Major Works:

Providing, fabricating and installing the structural steel barricading made out of 1.5mm thick M.S. plate of size 2500mm x 2000mm, ISMC 250 x 50 Channels, M.S. Angles ISA 50 x 50 x 6mm and ISMB 250 as per IS 1161 – 1 RHS/SHS rolled angle plates of TATA Steel, Lloyd Steel, SAIL, ESSAR steel approved in straight profile of all sizes, shapes and for all works including stiffeners, bolts and nuts, fillet/butt welding, splicing, machine grinding, of all member joints wherever required to give neat appearance and daily cleaning the barricading along with displaying of the Depth wise slogans as given in Annexure – III etc with interlocking arrangement to avoid gap in between and as directed by Engineer-in-Charge.



ANNEXURE III

1) HYDRAULIC ENGINEERS'S DEPARTMENT /WATER SUPPLY PROJECTS

- i) Inconvenience Regretted
- ii) Ensuring Mumbai's Water Supply
- iii) Save Water Save Life

2) ROAD, TRAFFIC / BRIDGES DEPARTMENT

- i) Inconvenience Regretted
- ii) Working towards a better tomorrow
- iii) My Mumbai, Green Mumbai

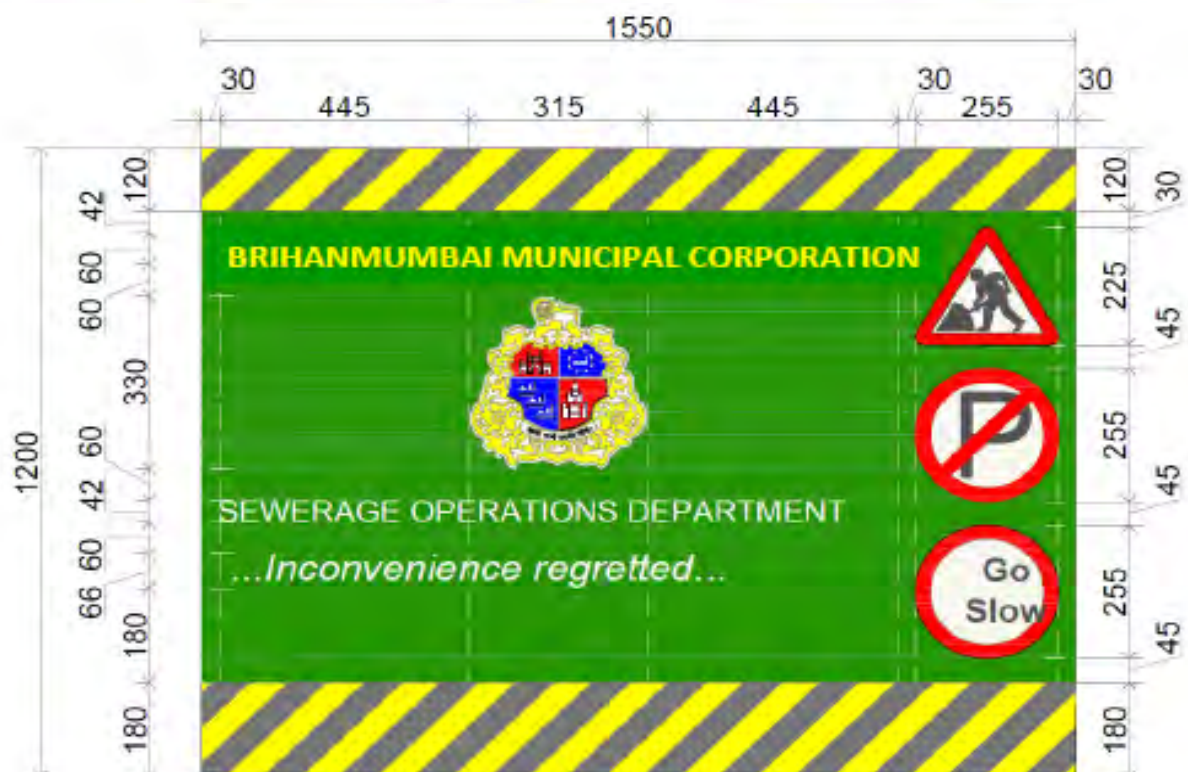
3) SEWERAGE PROJECTS DEPARTMENT/ SEWERAGE OPERATIONS DEPARTMENT

- i) Inconvenience Regretted
- ii) Reduce Reuse Recycle
- iii) Clean Mumbai, Healthy Mumbai

4) STORM WATER DRAIN DEPARTMENT /WARD WORKS

- i) Inconvenience Regretted
- ii) Working towards a better tomorrow
- iii) Swatch Bharat









Annexure- N

प-१५

बृहन्मुंबई महानगरपालिका विधी खाते

परिपत्रक क्र. 26006 दि. 22.07.2022

विषय - कंत्राट करार करण्यासाठी वसूल करावयाचे विधी आकार (Legal charges) व लेखनसाहित्य आकार (Stationery charges)

- संदर्भ - 1. विधी खात्याचे परिपत्रक क्र. 03 दि. 22.06.2021
2. परिपत्रक क्र. सीए/एफआरएम/49 दि. 07.02.2013
3. क्र. सीए/एफआरएम/एफआय/82 दि. 07.03.2022
4. परिपत्रक क्र. 10318 दि. 24.03.2022

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महानगरपालिकेच्या विविध खात्यांमार्फत मागविण्यात येणा-या निविदांसंदर्भात लेखी करार करताना पक्षकाराकडून एकत्रितरित्या आकारावयाच्या विधी आकार व लेखनसाहित्य आकाराची उपरोक्त संदर्भित क्र. 4 वरील परिपत्रकानुसार दि. 01.04.2022 पासून आकारणी करण्यात येत आहे.

तथापि शुल्क सुचीतील अनु.क्र.1, 14 व 19 च्या कंत्राट कराराच्या रक्कमेमध्ये अनावधानाने चुकीची रक्कम नमूद केली होती. त्यामध्ये सुधारणा करण्यात आली असून खालील तक्त्यामध्ये दर्शविल्याप्रमाणे दि.01.04.2022 पासून सुधारीत विधी व लेखनसाहित्य (एकत्रितरित्या) आकार विहित करण्यात आलेले आहेत.

अनु. क्र	कंत्राट करार करण्यासाठी एकत्रितरित्या आकारावयाच्या विधी व लेखन साहित्य आकारासाठी कंत्राट कराराची रक्कम	एकत्रितरित्या आकारावयाचे सुधारीत विधी व लेखन साहित्य आकार दि. 01.04.2022 पासून दि. 31.03.2023 पर्यंत
1	रु. 10,001 ते रु. 50,000	निरंक
2	रु. 50,001 ते रु. 1,00,000	रु. 6,290/-
3	रु. 1,00,001 ते रु. 3,00,000/-	रु. 10,380/-
4	रु. 3,00,001 ते 5,00,000/-	रु. 12,470/-
5	रु. 5,00,001 ते रु. 10,00,000/-	रु. 14,510/-
6	रु. 10,00,001 ते रु. 20,00,000/-	रु. 16,570/-
7	रु. 20,00,001 ते रु. 40,00,000/-	रु. 18,660/-
8	रु. 40,00,001 ते रु. 1,00,00,000/-	रु. 20,720/-
9	रु. 1,00,00,001 ते रु. 10,00,00,000/-	रु. 24,450/-

10	रु. 10,00,00,001 ते रु. 20,00,00,000/-	रु. 28,220/-
11	रु. 20,00,00,001 ते रु. 30,00,00,000/-	रु. 31,980/-
12	रु. 30,00,00,001 ते रु. 40,00,00,000/-	रु. 35,740/-
13	रु. 40,00,00,001 ते रु. 50,00,00,000/-	रु. 39,470/-
14	रु. 50,00,00,001 ते रु. 1,00,00,00,000/-	रु. 47,000/-
15	रु. 1,00,00,00,001 ते रु. 2,00,00,00,000/-	रु. 58,270/-
16	रु. 2,00,00,00,001 ते रु. 3,00,00,00,000/-	रु. 65,770/-
17	रु. 3,00,00,00,001 ते रु. 4,00,00,00,000/-	रु. 75,120/-
18	रु. 4,00,00,00,001 ते रु. 5,00,00,00,000/-	रु. 84,510/-
19	रु. 5,00,00,00,001 पासून कोणत्याही मर्यादेपर्यंत	रु. 93,920/-

Anulle
29/7/2022

(सुखश्री मि. मोदले)
उप कायदा अधिकारी (हस्तांतरण 1 व 2)
विधि खाते

Ranjit
29/07/2022

(कोमल पंजाबी)
कायदा अधिकारी (प्र.)
विधि खाते

परिपत्रक क्र. 26006 दि. 22.07.2022

प्रत यांना माहितीकरीता व पुढील
आवश्यक त्या कार्यवाहीकरीता अग्रेषित.

Patil
21/07/2022

(संदिप मो. पाटील)
उप कायदा अधिकारी (आस्थापना)
विधि खाते

Annexure– O

BRIHANMUMBAI MAHANAGARPALIKA

CIRCULAR

2020-21

No.CA(F)/Project/ 32 of 26.10.2020

Sub : Bid Security or EMD

Ref : No.MDD/7878 of 27.09.2016

The MCGM's tender conditions have been amended and Standard Bid Document has been circulated vide No.MDD/7878 of 27.09.2016.

The condition of refund of Bid Security or EMD incorporated in SBD, is as follows :-

- (i) The Bid Security of the successful bidder will be discharged when the bidder has signed the agreement and furnished the required Security Deposits.
- (ii) The Bid Security/EMD of L-3 and bidders shall be refunded immediately after opening of financial bid but **the EMD/ASD submitted by the L-2 bidder will be returned after obtaining Standing Committee Resolution.**

In recent past, due to COVID-19 pandemic, various benefits and relief are given to contractor for ease of doing business and to maintain their cash flow. Further, the Statutory Committee meetings are not held in this pandemic situation. Hence, the condition of refund of Bid Security/EMD and ASD is reviewed and revised condition for all invited tenders wherein Statutory Committee's sanction has not been accorded and forthcoming e-tenders –

- (a) The Bid Security/EMD of the successful bidder will be discharged when the bidder has signed the agreement and furnished the required Security Deposits.
- (b) The Bid Security/EMD and ASD of L-2 and other higher bidders (L-3, L-4, etc.) shall be refunded immediately after opening of financial bid.

- (c) In case, the successful bidder becomes non-responsive or successful bidder withdraws the bid or is unwilling to extend the bid validity period, in such circumstances, if L-2 bidder is agreeable to extend the bid validity period and ready to deposit the requisite amount of bid security/EMD and ASD to the department within the stipulated time period i.e. 15 days, the department will process further as per normal procedure.

The above revised directives shall come into effect immediately on issuance of this circular.

All Chief Engineers/Head of Departments/Deans shall note the above directives and follow them scrupulously.

Sd/-13.10.2020
C.A.(W.S.S.D.)

Sd/-13.10.2020
C.A.(Finance)i.c

Sd/-13.10.2020
D.M.C.(Infra)

Sd/-13.10.2020
D.M.C.(E)

Sd/-13.10.2020
Dir.(ES&P)

Sd/-16.10.2020
A.M.C.(P)

Sd/-23.10.2020
Municipal Commissioner

Annexure-P

बृहन्मुंबई महानगरपालिका

परिपत्रक

२०२०-२१

क्र.प्रले(वित्त)/४२ दिनांक ०९.०२.२०२१

विषय:- बृहन्मुंबई महानगरपालिकेत कंत्राटदारामार्फत पार पाडावयाच्या कामाच्या मसुदा निविदेमध्ये अतिरिक्त सुरक्षा अनामत रक्कमेबाबतची सुधारित अट समाविष्ट करण्याबाबत.

संदर्भ:- एमडीडी/७८७८ दिनांक २७.०९.२०१६.

बृहन्मुंबई महानगरपालिकेत कंत्राटदारामार्फत पार पाडण्यात येणाऱ्या कामाकरिताच्या मसुदा-निविदेत समाविष्ट करावयाच्या अतिरिक्त सुरक्षा अनामत रक्कमेबाबतच्या अटीबाबतचे निर्देश संदर्भित परिपत्रकान्वये निर्गमित करण्यात आले आहेत. त्यामध्ये खालीलप्रमाणे सुधारणा करण्यात येत आहे.

विद्यमान पध्दत:-

ई-निविदा सूचनेस प्रतिसाद करून ज्या ज्या कंत्राटदारांनी वजा -१२% पेक्षा कमी दराने टक्केवारी उदधृत केली आहे, अश्या सर्व कंत्राटदारांना वजा १२% पेक्षा जास्त नमूद केलेल्या प्रत्येक टक्क्याला १% याप्रमाणे कोणतीही मर्यादा न ठेवता ऑनलाईन निविदा सादर करताना अतिरिक्त सुरक्षा अनामत रक्कम ऑनलाईन स्विकारली जाते.

सुधारित पध्दत:-

१. कंत्राटदाराने वजा -१२% पेक्षा कमी दराने टक्केवारी उदधृत केली असल्यास वजा १२% पेक्षा जास्त असलेल्या प्रत्येक टक्क्याला १% याप्रमाणे ऑनलाईन निविदा सादर करताना अतिरिक्त सुरक्षा अनामत रक्कमेचा ऑनलाईन भरणा करणे आवश्यक नसेल.

२. कंत्राट रकमेनुसार सक्षम प्राधिकाऱ्यांची मंजूरी प्राप्त झाल्यानंतर प्रथम लघुत्तम असलेल्या निविदाकाराने कार्यस्विकृती पत्रात नमूद केल्यानुसार कार्यालयीन कामकाजाच्या १५ दिवसात विद्यमान पध्दतीनुसार अतिरिक्त सुरक्षा अनामत रक्कम डिमांड ड्राफ्ट स्वरूपात महानगरपालिकेचा नागरी सुविधा केंद्रात जमा करणे व त्या पावतीची प्रत खातेप्रमुखाकडे सादर करणे आवश्यक असेल.

३. जर प्रथम लघुत्तम निविदाकाराने कार्यस्विकृती पत्रात नमूद केल्यानुसार कार्यालयीन कामकाजाच्या १५ दिवसांमध्ये अतिरिक्त सुरक्षा अनामत रक्कम जमा केली नाही तर सदर कंपनीने भरणा केलेली संपूर्ण इसारा अनामत रक्कम (EMD) जप्त केली जाईल तसेच कंपनीला दोन वर्षासाठी डीबार (Debar) करण्यात येईल, त्याचप्रमाणे त्या कंपनीचे संचालक/

LoA)

Cable giving

Annexure-Q

जम.२८६-२५००(२)

बृहन्मुंबई महानगरपालिका

परिपत्रक

२०१२-१३

क्रमांक :- सीए/एफबीके/३९, दिनांक ०७/१२/२०१२

विषय :- बँकेने दिलेले हमीपत्र (बँकर्स गॅरंटी) स्वीकारण्याबाबत.

कंत्राटदार/पुरवठादार यांच्याकडून सादर करण्यात येणारी बँक हमीपत्रे (बँकर्स गॅरंटी) स्वीकारण्यासंदर्भात एक प्रशासकीय धोरणात्मक बाब म्हणून (१) स्टेट बँक ऑफ इंडिया आणि तिच्या संलग्न बँका, (२) राष्ट्रीयीकृत बँका, (३) अनुसूचित वाणिज्य बँका, (४) अनुसूचित नागरी सहकारी बँका, (५) विदेशी बँका ह्या प्रवर्गातील बृहन्मुंबई महानगरपालिका तसेच त्यापुढील विरार व कल्याण पर्यंतच्या क्षेत्रातील विहित बँका आणि त्यांच्या शाखा यांनी दिलेली बँक हमीपत्रे स्वीकारण्यास मान्यता देण्यात आलेली असून, यासंदर्भातील सूचना सर्व संबंधितांच्या माहितीकरीता वेळोवेळी परिक्रमित करण्यात आल्या आहेत. त्या सातत्यात पुढील प्रमाणे नमूद करण्यात येत आहे :-

■ रिझर्व बँक ऑफ इंडिया यांनी त्यांच्या 'rbidocs.rbi.org.in/rdocs/publications/pdfs/84656.pdf' ह्या अधिकृत वेबसाईटवर रिझर्व बँक ऑफ इंडिया अधिनियम, १९३४ अन्वयेची अनुसूची-दोन माहितीकरीता उपलब्ध केलेली आहे. सदर अनुसूची-दोन मध्ये (१) स्टेट बँक ऑफ इंडिया आणि तिच्या संलग्न बँका, (२) राष्ट्रीयीकृत बँका, (३) इतर सार्वजनिक क्षेत्रातील बँका, (४) खाजगी क्षेत्रातील बँका, (५) विदेशी बँका ह्या प्रवर्गात नमूद करण्यात आलेल्या बृहन्मुंबई महानगरपालिका तसेच त्यापुढील विरार व कल्याण पर्यंतच्या क्षेत्रातील सर्व बँकांच्या शाखा, बँक हमीपत्रे स्वीकारण्याबाबतच्या प्रयोजनाकरीता मान्यताप्राप्त आहेत.

■ सदर अनुसूची दोन मधील राज्य सहकारी बँका आणि ग्रामीण बँका ह्या प्रवर्गातील बँका मात्र (महाराष्ट्र स्टेट को.ऑप.बँक लि, मुंबई ही एक बँक वगळता) बँक हमीपत्रे स्वीकारण्याबाबतच्या प्रयोजनाकरीता मान्यताप्राप्त नाहीत.

■ महाराष्ट्र सहकारी संस्था अधिनियम, १९६०च्या तरतूदी विचारात घेऊन "महाराष्ट्र स्टेट को.ऑप.बँक" आणि "मुंबई डिस्ट्रिक्ट सेंट्रल को.ऑप.बँक" ह्या दोन सहकारी बँका, बँक हमीपत्रे स्वीकारण्याच्या प्रयोजनाकरीता मान्यताप्राप्त आहेत असे यापूर्वी ठरविण्यात आले आहे. त्यानुसार सदर दोन्ही बँका प्रस्तुत प्रयोजनाकरीता यापुढेही मान्यताप्राप्त आहेत असे समजण्यात यावे.

E/VIKAS/BANK GUARANTY 2012

जन-२८६

2

■ बैंक हमीपत्रे स्वीकारण्याबाबतच्या प्रयोजनाकरीता मान्यताप्राप्त असलेल्या उपरोल्लेखित बँकांच्या कल्याण आणि विरार या शहरांच्या पुढील क्षेत्रातील शाखेने दिलेले बँक हमीपत्र सादर करण्याची कंत्राटदारांची/पुरवठादारांची इच्छा असल्यास, सदर बँक हमीपत्रावर त्याच बँकेच्या मुंबई शहराच्या हद्दीमधील शाखेच्या व्यवस्थापकांनी, हे बँक हमीपत्र आपल्या शाखेवर बंधनकारक राहील आणि ते देणा-या कंत्राटदाराने/पुरवठादाराने कोणताही कसूर केल्यास सदर हमीपत्राच्या अंमलबजावणीच्या कारवाईसाठी आपली शाखा पात्र राहील असे बिनशर्त प्रतिसाक्षांकन देणे अनिवार्य आहे.

■ बँक हमीपत्रासंदर्भात संबंधित बँकेकडून करण्यात येणाऱ्या कोणत्याही पत्रव्यवहारात कंत्राटदाराचे नांव, कंत्राट क्रमांक, दिनांक, कंत्राटाच्या कामाचे नांव, संकेतांक तसेच महानगरपालिकेच्या संबंधित खात्याचे नांव इत्यादि तपशील नमूद केलेला असणे आवश्यक आहे. जेणेकरून प्रस्तुत पत्रव्यवहाराच्या अनुषंगाने महानगरपालिकेला सत्वर उचित कार्यवाही करता येईल.

कंत्राटदार/पुरवठादार यांच्याकडून सादर करण्यात येणारी बँक हमीपत्रे (बँकर्स गॅरंटी) स्वीकारण्या संदर्भातील उपरोल्लेखित सूचनांची नोंद घेऊन त्या अनुषंगाने कार्यवाही करण्यात यावी, अशी सर्व खातेप्रमुख, सहाय्यक महापालिका आयुक्त आणि संबंधित यांना विनंती आहे.

सही /- ०४.१२.२०१२

प्रमुख लेखापाल (वित्त)

परिपत्रक

२०१२-१३

क्र.सीए/एफबीके/३९, दिनांक ०७/१२/२०१२

-----यांना प्रत (-----) अधिक प्रतींसह

माहितीकरिता व योग्य त्या कार्यवाहीसाठी पाठवित आहे.

का.८
१०/१२/१२

प्रमुख लेखापाल (वित्त) यांजकरिता

बृहन्मुंबई महानगरपालिका

परिपत्रक

२०१४-१५

क्रमांक :- सीए/एफबीके/२५, दिनांक ३०/१०/२०१४

विषय :- बँकेने दिलेले हमीपत्र (बँकर्स गॅरन्टी) स्वीकारण्याबाबत.

संदर्भ :- सीए/एफबीके/३९, दिनांक ०७/१२/२०१२

कंत्राटदार / पुरवठा यांच्याकडून सादर करण्यात येणारी बँक हमीपत्रे (बँकर्स गॅरन्टी) स्वीकारण्यासंदर्भात उपरोक्त संदर्भाधीन परिपत्रकान्वये मार्गदर्शनपर सूचना परिष्कृता करण्यात आल्या आहेत. सदर परिपत्रकातील परिच्छेद क्रमांक २ मध्ये नमूद करण्यात आलेल्या बँकांच्या प्रवर्गात नागरी सहकारी बँकांचा (Urban Co-Operative Banks) उल्लेख नसल्याने सदर परिच्छेद पुढीलप्रमाणे सुधारित करण्यात येत आहे.

"रिझर्व बँक ऑफ इंडिया यांनी त्यांच्या 'rbidocs.rbi.org.in/docs/publications/pdfs/84656.pdf' ह्या अधिकृत वेबसाईटवर रिझर्व बँक ऑफ इंडिया अधिनियम, १९३४ अन्वयेची अनुसूची-दोन माहितीकरीता उपलब्ध केलेली आहे. सदर अनुसूची-दोन मध्ये (१) स्टेट बँक ऑफ इंडिया आणि तिच्या संलग्न बँका, (२) राष्ट्रीयीकृत बँका, (३) इतर सार्वजनिक क्षेत्रातील बँका, (४) खाजगी क्षेत्रातील बँका, (५) विदेशी बँका आणि (६) नागरी सहकारी बँका ह्या प्रवर्गात नमूद करण्यात आलेल्या बृहन्मुंबई महानगरपालिका तसेच त्यापुढील विहार व कल्याण पर्यंतच्या क्षेत्रातील सर्व बँकांच्या शाखा, बँक हमीपत्रे स्वीकारण्याबाबतच्या प्रयोजनाकरीता मान्यताप्राप्त आहेत."

तरी, सर्व खातेप्रमुख, सहाय्यक महापालिका आयुक्त आणि संबंधित यांनी घरील सुधारणेची कृपया नोंद घ्यावी अशी विनंती आहे.

सही/२२.१०.२०१४

प्रमुख लेखापाल (वित्त)

परिपत्रक

२०१४-१५

क्र.सीए/एफबीके/२५, दिनांक ३०/१०/२०१४

-----यांना प्रत (-----) अधिक प्रतिसह

माहितीकरिता व योग्य त्या कार्यवाहीसाठी पाठवित आहे.

Rhandekar
11/11/14
प्रमुख लेखापाल (वित्त) यांच्याकरीता

D/BANK GUARANTY 2012

BMPP- J- 17643 - 2014-15 - 2500

बृहन्मुंबई महानगरपालिका

परिपत्रक

२०१९-२०

क्रमांक : सीए/एफबीके/२४१, दिनांक २७.११.२०१९

विषय : बँकेने दिलेले हमीपत्र (बँकर्स गॅरंटी) विकारण्याबाबत.

संदर्भ - सीए/एफबीके/३९, दिनांक - ०७/१२/२०१२

सीए/एफबीके/२५, दिनांक - ३०/१०/२०१५

केब्राटदार / पुरवठादार यांच्याकडून सादर करण्यात येणारी बँक हमीपत्रे (बँकर्स गॅरंटी) विकारण्यासंदर्भात उपरोक्त संदर्भाधीन परिपत्रकाच्या मार्गदर्शनपर सूचना परिक्रमित करण्यात आल्या आहेत. सदर परिपत्रकातील परिच्छेद क्रमांक २ मध्ये पुढील प्रमाणे सुधारणा करण्यात येत आहेत.

सदर परिपत्रकात नमूद केलेली भारतीय रिझर्व बँकेची "rbidocs.rbi.org.in/docs/publications/pdfs/84656.pdf" ही लिंक "www.rbi.org.in" अशी वाचण्यात यावी.

तरी, सर्व खातेप्रमुख, सहाय्यक महापालिका आयुक्त आणि संबंधित यांनी बरील सुधारणेची नोंद घेऊन संबंधित केब्राटदार/पुरवठादार यांना अवगत करावे.

सही/- १४.११.२०१९

प्रमुख लेखापाल (पा.पु.न.नि.)

सही/- १४.११.२०१९

प्रमुख लेखापाल (वित्त) २.

परिपत्रक

२०१९-२०

क्रमांक : सीए/एफबीके/२४९, दिनांक २७.११.२०१९

यांना प्रत (-----) अधिक प्रतीसह माहितीकरिता व योग्य त्या कार्यवाहीसाठी पाठवित आहे.

सदर परिपत्रक महानगरपालिकेच्या <http://hr.mrgm.gov.in/Circular/CA/Finance/2019/> या संकेतस्थळावर प्रसिद्ध करण्यात आलेले आहे.

वि.प्र.कयरे-२५११०८

प्रमुख लेखापाल (वित्त) यांजकरिता

NS3429-CA-EMPP-39772-2019-20-2200(Gp)es

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Annexure - R

MUNICIPAL CORPORATION OF GREATER MUMBAI

CIRCULAR

No.CA (F)/Project/31 Dt. 26/10/2020.

Subject: - Revised Policy for Governing Extra-excess-saving

Ref:- 1. Circular No.CA/FRD/I/57 dt.13.03.2013.

2. Circular No. Dir/E.S.&P./324 dt.15.07.2015.

At present the extra/excess/saving proposals are dealt as per Decision Rules framed under circular No.CA/FRD/I/57 of 13.03.2013 &Dir/E.S.&P./324 dt.15.07.2015.

Hon'ble M.C. has directed to review the existing Decision Rules and amend it suitably. Accordingly, in view to exercising effective control over the extra/excess and speedy process of such proposal during execution of the work, the powers of approval of extra/excess /saving and Fair items are reviewed and delegated according to the attached modified statement-"A". Except this, other conditions of Circular No. DIR./E.S.&P./324 dt.15.07.2015 shall remain unchanged and will be applicable as it is.

The "Decision Rules" framed and circulated apropos circular No.CA/FRD/I/57 of 13.03.2013 and Dir/ES&P/324 of 15.07.2015 shall remain applicable for those extra/excess works which were executed before issuance of these amended rules/directives by obtaining prior administrative approval of competent authority, as the case may be.

The revised policy for governing Extra/Excess and Fair items will come into effect immediately from the issuance of this circular.

All Chief Engineers/ Head of Departments/Deans shall note the above directives and follow them scrupulously.

Sd/- 13.10.2020

C. A. (WSSD)

Sd/- 13.10.2020

C. A. (Finance)i.c.

Sd/- 13.10.2020

D.M.C. (Infra)

Sd/- 13.10.2020

D.M.C.(E.)

Sd/- 14.10.2020

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

Sd/- 13.10.2020

Dir.(E.S.&P.)

Sd/- 16.10.2020

A.M.C. (Project)

Sd/- 23.10.2020

Municipal Commissioner

Statement –A

(i) Extra/Excess/Saving

Nature of work	Permissible limit of Extra/Excess/Saving and Approving authority		
	DMC (Infra)/ DMC (E)/ DMC (SE)/ Dir (ES&P)/ Jt.M.C.	Concerned A.M.C.	Municipal Commissioner
General Work/ Underground works/ Unforeseen works	(i) <u>Cumulative</u> amount of Extra/Excess/Saving in any <u>individual item</u> Upto Rs.25 Lakh And (ii) Total <u>Cumulative</u> amount of Extra/Excess/Saving <u>on all items</u> upto 5% of the total contract cost, but not exceeding Rs.1 crore	(i) <u>Cumulative</u> amount of Extra/Excess/Saving in any <u>individual item</u> Upto Rs.1crore And (ii) Total <u>Cumulative</u> amount of Extra/Excess/Saving <u>on all items</u> upto 15 % of the total contract cost, but not exceeding Rs.10 crore	(i) <u>Cumulative</u> amount of Extra/Excess/Saving in any <u>individual item</u> above Rs.1Crore And / OR (ii) Total <u>Cumulative</u> amount of Extra/Excess/Saving <u>on all items</u> above 15% of the total contract cost. And / OR <u>Cumulative</u> amount of Extra/Excess/Saving <u>on all items</u> exceeding Rs.10 Crores.
<u>Payment Terms:</u> <u>Excess Items</u> shall be paid as per the rates quoted by the tenderer at the time of tender <u>Extra Items</u> shall be paid as per the rate prevailing in “Unified Schedule of Rate” of MCGM at the time of tender at rebate quoted by the contractor or at Par in case of premium quoted by the contractor at the time of tender			

(ii) Fair Item

Nature of work	Permissible limit of Fair Item and Approving authority		
	DMC(Infra)/ DMC(E)/ DMC(SE)/ Dir(ES&P)/ Jt.M.C.	Concerned A.M.C.	Municipal Commissioner
For all nature of work	Total <u>Cumulative</u> amount of Fair <u>on all items</u> upto 2% of the total contract cost, but not exceeds Rs.20 Lakh	Total <u>Cumulative</u> amount of Fair <u>on all items</u> upto 5 % of the total contract cost, but not exceeds Rs.1 crore (Other than the proposals in the purview of DMC/Jt.MC)	Total <u>Cumulative</u> amount of Fair <u>on all items</u> above 5% of the total contract cost. And / OR <u>Cumulative</u> amount of Fair <u>on all items</u> exceeding Rs.1 Crore.

Payment Terms:

Fair Items shall be got approved by the concerned DMC/Dir(ES&P)/Jt.M.C. The engineer in-charge shall work out these fair items at fair and reasonable market rates on the basis of material, labour and operation of construction equipment required to execute the item and allowing 15% to cover profits and overhead charges(i.e. including taxes, duties, etc.) On the same lines of rate analysis prepared for the items that are in "Unified Schedule of Rate" of MCGM.

The rates of Fair Items shall be valid for one year only. Moreover, no escalation will be admissible on the fair items till the completion of such works, in which the fair items are executed.

Fair Items shall be paid **at PAR** in case of premium quoted by the contractor, in newly created FAIR ITEM or item not included in prevailing "Unified Schedule of Rate" of MCGM at the time of tender. OR at rebate quoted by the contractor if it is already added in prevailing "Unified Schedule of Rate" of MCGM at the time of tender.

Sd/- 13.10.2020	Sd/- 13.10.2020	Sd/- 13.10.2020	Sd/- 13.10.2020	Sd/-14.10.2020	Sd/-13.10.2020
C. A. (WSSD)	C. A. (Finance).i.c.	D.M.C.(Infra)	D.M.C.(E.)	D.M.C.(S.E.)	Dir.(E.S.&P.)

Annexure – S

MUNICIPAL CORPORATION OF GREATER MUMBAI

Office of the DMC CPD,
Central Purchase Department,
566, N.M.Joshi Marg, Byculla, Mumbai-400 011.

✓ No. DyChE/ CPD/ 2025 / dt. 01/09/2021

CIRULAR

Sub: Formation of Grievance Redressal Committee (GRC)
to address grievances from bidders.

Ref.: MGC/F/4961 dated 09/08/2021.

Hon. M.C.'s accorded sanction under reference to form Grievance Redressal Committee (GRC) to address grievances from the bidders regarding responsiveness/ non-responsiveness in Packets 'A', 'B' or 'C' in all the tenders. Therefore, all HOD's are requested to incorporate following condition in all the tenders;

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 DMC/ Director/ Jt.M.C. of the 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 member of the Committee.
5. The Committee will hear the grievances of bidder within 30 days on receipt 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.

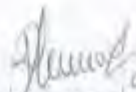
Sd/- 27.07.2021
Dy ChE (Civil) CPD

sd/- 27.07.2021
D.M.C. (C.P.D.)

Sd/- 30.07.2021
A.M.C. (WS)

sd/- 06.08.2021
Hon,ble M. C.

The above circular approved by Hon,ble MC is submitted for necessary action please.


01/09/2021
Dy ChE (CPD) Civil

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	Actual Cost of work done
1	2	3	4	5	6

NOTE:

- a. 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.
- b. Works shall be grouped financial year-wise.

PROFORMA- II

Yearly Turnover During the Last Three Years.

PROFORMA- II					
Sr.No.	Financial year	Annual Turnover	Updated Value to Current year	Average of last 3 years	Page No.
1					
2					
3					
Total					

NOTE: The above figures shall tally with the audited balance sheets uploaded by the tenderer duly certified by Chartered Accountant.

PROFORMA- III

At least similar work, as stated in para 'A' of Post qualification,

PROFORMA- III							
Name of the Project	Name of the Employer	Cost of the Project	Date of issue of work Order	Stipulated Date of Completion	Actual Date of Completion	Actual cost of work done	Remarks explaining reasons for delay, if any
1	2	3	4	5	6	7	8

NOTE: Scanned Attested copies of completion/performance certificates from the Engineer-in-charge for each work should be annexed in support of information furnished in the above proforma.

PERSONNEL

PROFORMA- IV					
Sr. No.	Post	Name (Prime Candidate / Alternate)	Qualification	Work Experience	
				No. of years	Name of the Project
1					
2					
3					
4					

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	Owned/Leased/Assured access
1	2	3	4

PROFORMA- V/B

PROFORMA- V/B			
Sr. No.	Equipment	Number	Owned
1	2	3	4

NOTE: The tenderer(s) shall furnish/upload the requisite Scanned Attested documents of ownership/leased of machineries. The undertaking from the suppliers will not be accepted.

PROFORMA - VI / A

Details of Existing Commitments and Ongoing Works

PROFORMA- VI / A							
Description of work	Place	Contract No.& Date	Name &Address of employer	Value of Contract in Rs.	Scheduled Date of completion	Value of work remaining to be completed	Anticipated Date of completion
1	2	3	4	5	6	7	8

NOTE: Scanned Attested copies of completion/performance certificates from the Engineer-in-Charge for each work should be annexed in the support of information furnished in the above proforma.

PROFORMA - VI / B

Details of works for which bids are already uploaded -

PROFORMA - VI / B						
Description of Work	Place	Name & Address of employee	Value of Contract in Rs.	Time Period	Date on which decision is expected	Remarks
1	2	3	4	5	6	7

NOTE: Scanned Attested copies of certificates from the Engineer-in-charge for each work shall be annexed.

PROFORMA- VII

Information on Litigation History in which the applicant is involved.

PROFORMA – VII				
Other Party (/Parties)	Employer	Cause of Dispute	Amount involved	Remarks showing Present Status.
1	2	3	4	5

NOTE:

1. Scanned Attested copies of completion / performance certificates from the Engineer-in-charge for each work should be annexed and uploaded.
2. Litigation History must cover - Any action of blacklisting, debarring, banning, suspension, deregistration and cheating with BMC, State Govt., Central Govt. or any authority under State or Central Govt/Govt, organisation initiated against the company, firm, directors, partners or authorized signatory shall be disclosed for last 5 years from the date of submission of bid. Also, bidder must disclose the litigation history for last 5 years from the date of submission of bid about any action like show cause issued, blacklisting, debarring, banning, suspension, deregistration and cheating with BMC and BMC is party in the litigation against the company, firm, directors, partners or authorized signatory for carrying out any work for BMC by any authority of BMC and the orders passed by the competent authority or by any Court where BMC is a party. While taking decision on litigation history, the concerned Chief Engineer or D.M.C. or Director, as may be the case, should consider the details submitted by bidder and take decision based on the gravity of the litigation and the adverse effect of the act of company, firm, directors, partners or authorized signatory on the BMC works which can spoil the quality, output, delivery of any goods or any work execution and within the timeframe.

PROFORMA VIII

Memorandum of Understanding between Manufacturer & Authorised Representative

(On stamp paper of Rs. 500/- duly notarized)

Sub :-

.....

Bid Invitation No. :-

Deed for the MEMORANDUM OF UNDERSTANDING is made and entered into at _____ on _____ Between M/s. _____, manufacturer of **structural liner for Sewer Line(s)/ Storm Water Pipe Line(s) / Water Pipe Lines(s) by trenchless technology** having registered office at _____ hereinafter called as '**MANUFACTURER**'

AND

M/s. _____ AUTHORISED REPRESENTATIVE of above manufacturer having their registered office at _____ hereinafter called as '**AUTHORISED REPRESENTATIVE**'

It is hereby agreed by both manufacturer and their authorised dealer that:

1. Above manufacturer and authorised representative are jointly interested in participation in above subject tender on following individual roles and responsibilities.
2. The roles and responsibilities of the manufacturer regarding rehabilitation of Sewer lines by using proposed technology in the said bid are-

(Here Manufacturer shall mention their detailed roles and responsibility)

3. The roles and responsibilities of the authorized representative regarding rehabilitation of Sewerlines by using proposed technology in the said bid are-

(Here Authorised Representative shall mention their detailed roles and responsibility)

4. The manufacturer undertakes to make uninterrupted supply of liners required for the said project as per the schedule of the work and to provide all necessary technical support and after sales service during the entire contract period and thereafter.

5. In case Manufacturer / authorised representative fails to execute their obligation and responsibility as mentioned above or anywhere in the tender, BMC have right to blacklist the manufacturer / authorised representative for non performance.

Authorised Signatory & Seal

Authorised Signatory & Seal

On behalf of the Manufacturer

On behalf of the Authorised Representative

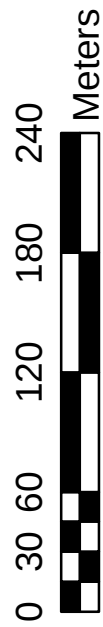
Witness :

- 1) _____
- 2) _____
- 3) _____
- 4) _____

SECTION – 16
DRAWINGS

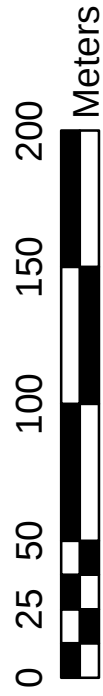
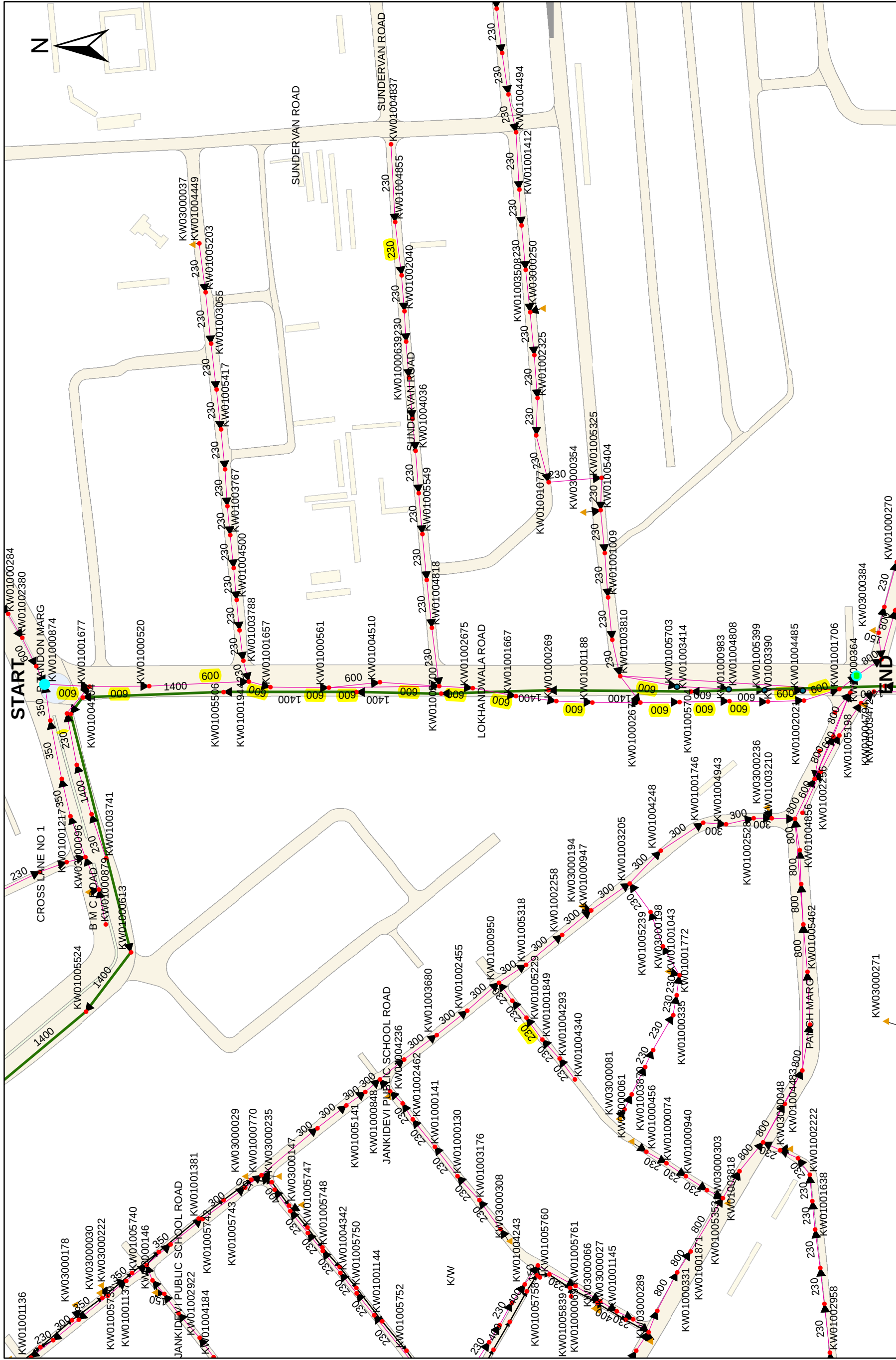
1. Vakola Road (From Jn. Sundar Nagar Road No. 2 & CST Road to Jn. Ch. Shivaji Maharaj Road)

(Dia. of Sewer line 600 mm and Length of Sewer Line 1540 Mtr.)



2. ACHUTRAO PATWARDHAN MARG (From Lokhandwala Circle to Platinum Height /Harley's Clinic)

(Dia. of Sewer line 600 mm and Length of Sewer Line 560 Mtr.)

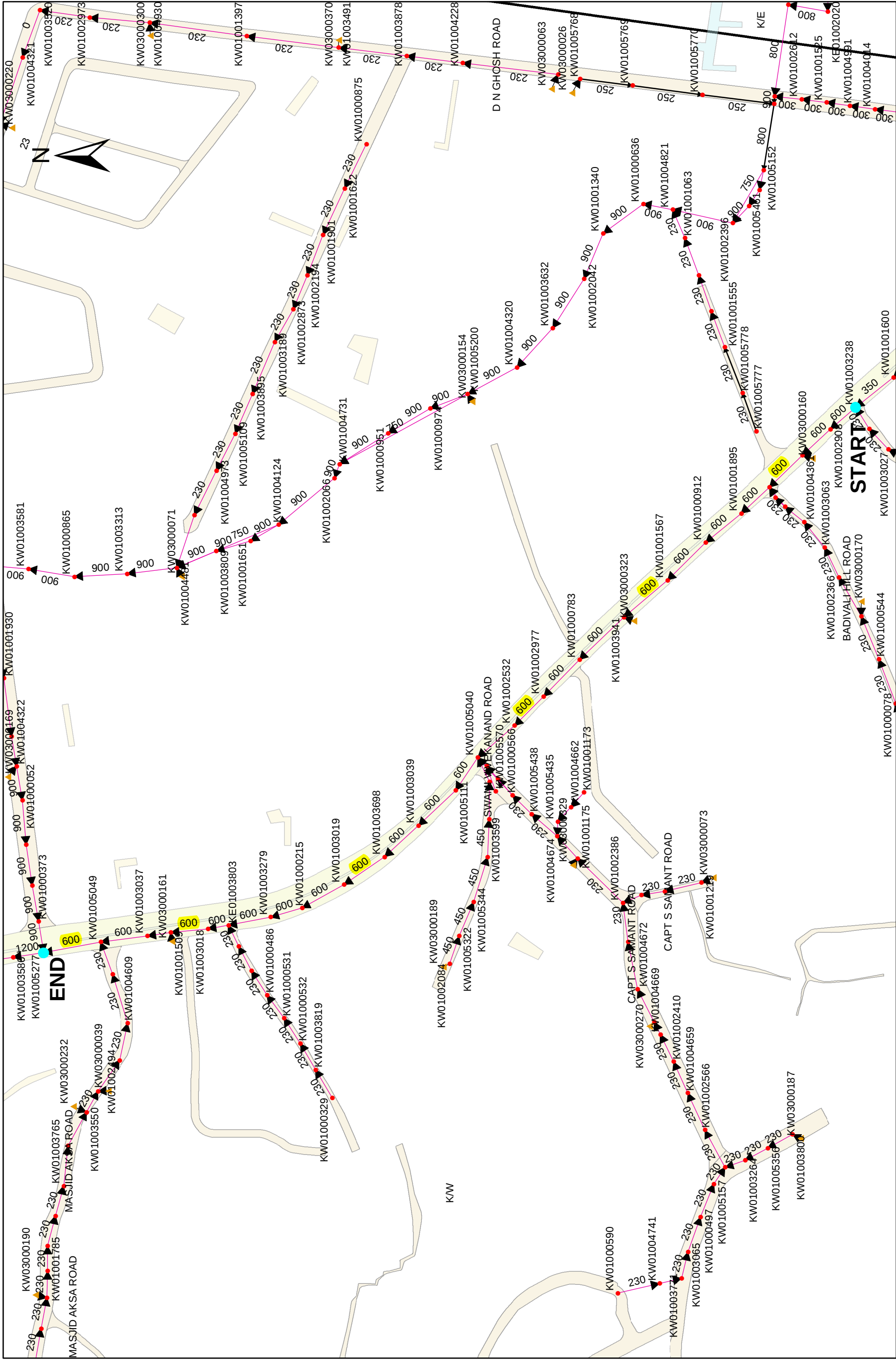


(Dia. of Sewer line 600 mm and Length of Sewer Line 650 Mtr.)



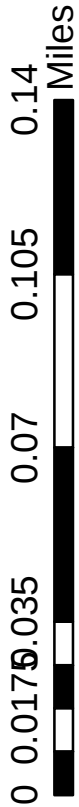
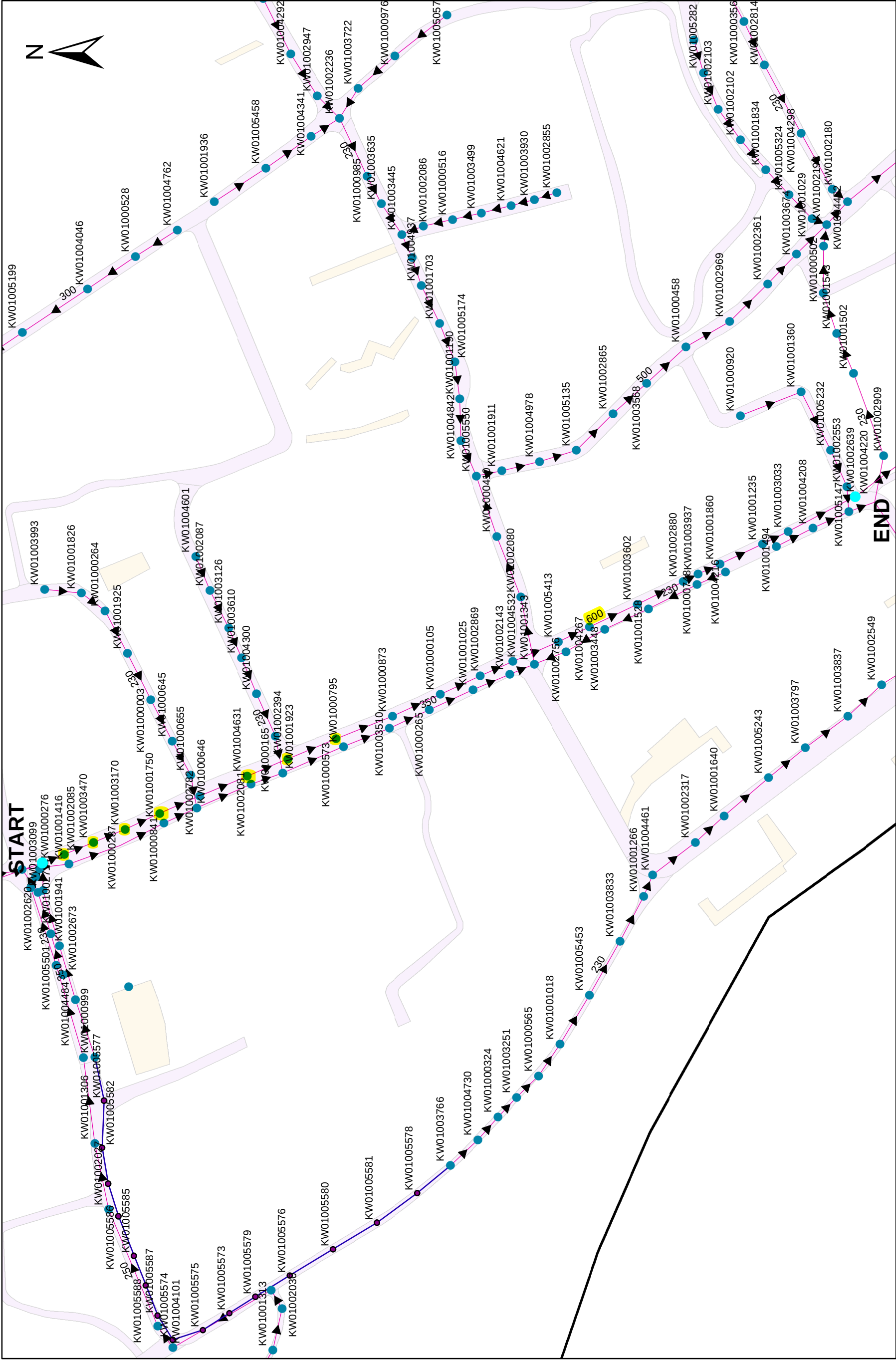
4. S.V. ROAD (JOGESHWARI) (From Jn. Sahakar Road to Patel Estate Road)

(Dia. of Sewer line 600 mm and Length of Sewer Line 670 Mtr.)



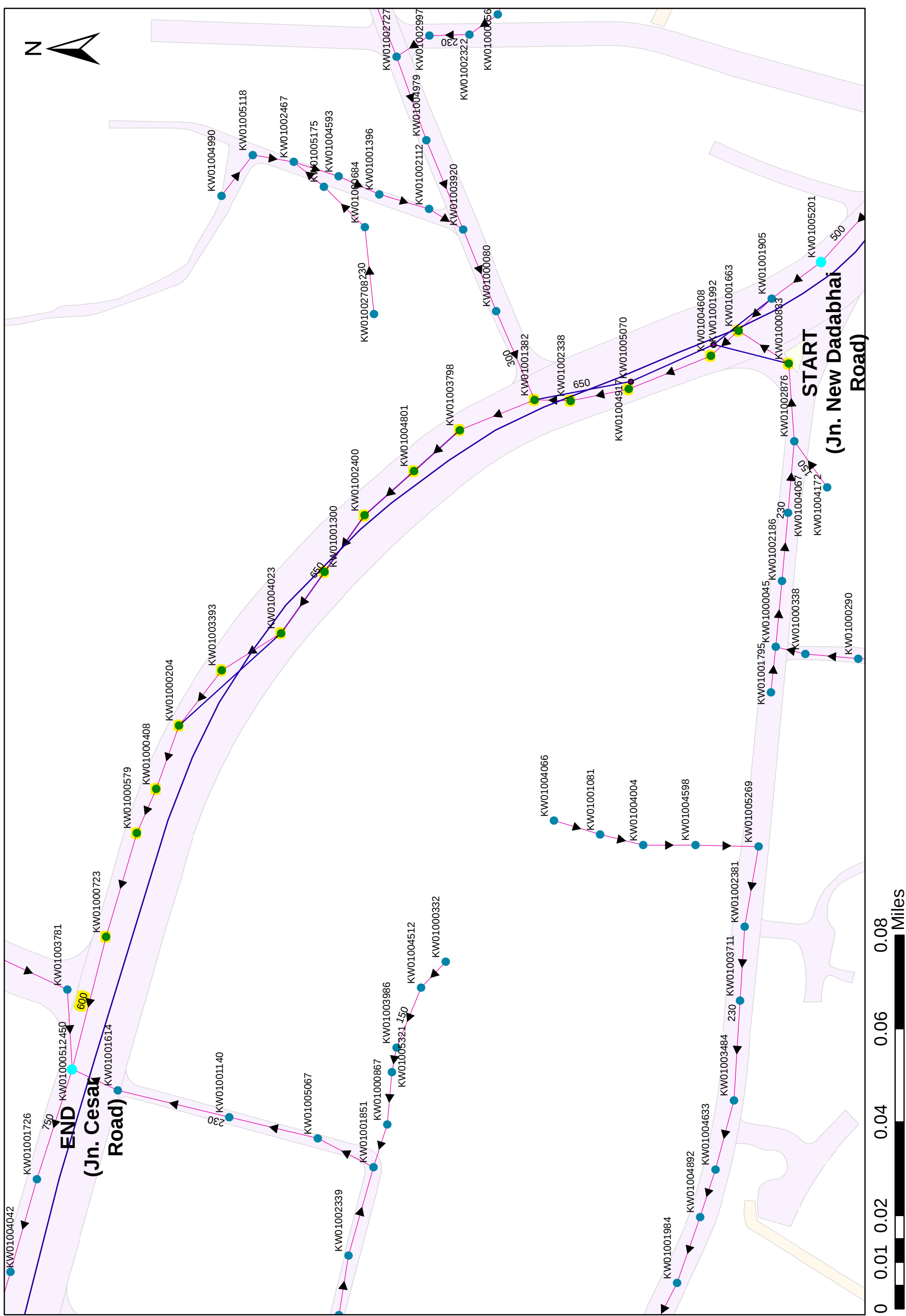
5. HARMINDER SINGH ROAD (From Aaram Nagar Corner to Wateshwar Mandir/JP road)

(Dia. of Sewer line 600 mm and Length of Sewer Line 480 Mtr.)



6. J. P. ROAD-2 (A-B) (From Janseva Sahakari Bank to Junction of Ceaser Road)

(Dia. of Sewer line 600 mm and Length of Sewer Line 200 Mtr.)



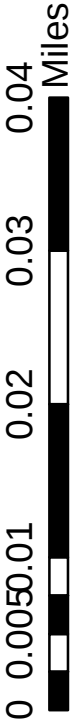
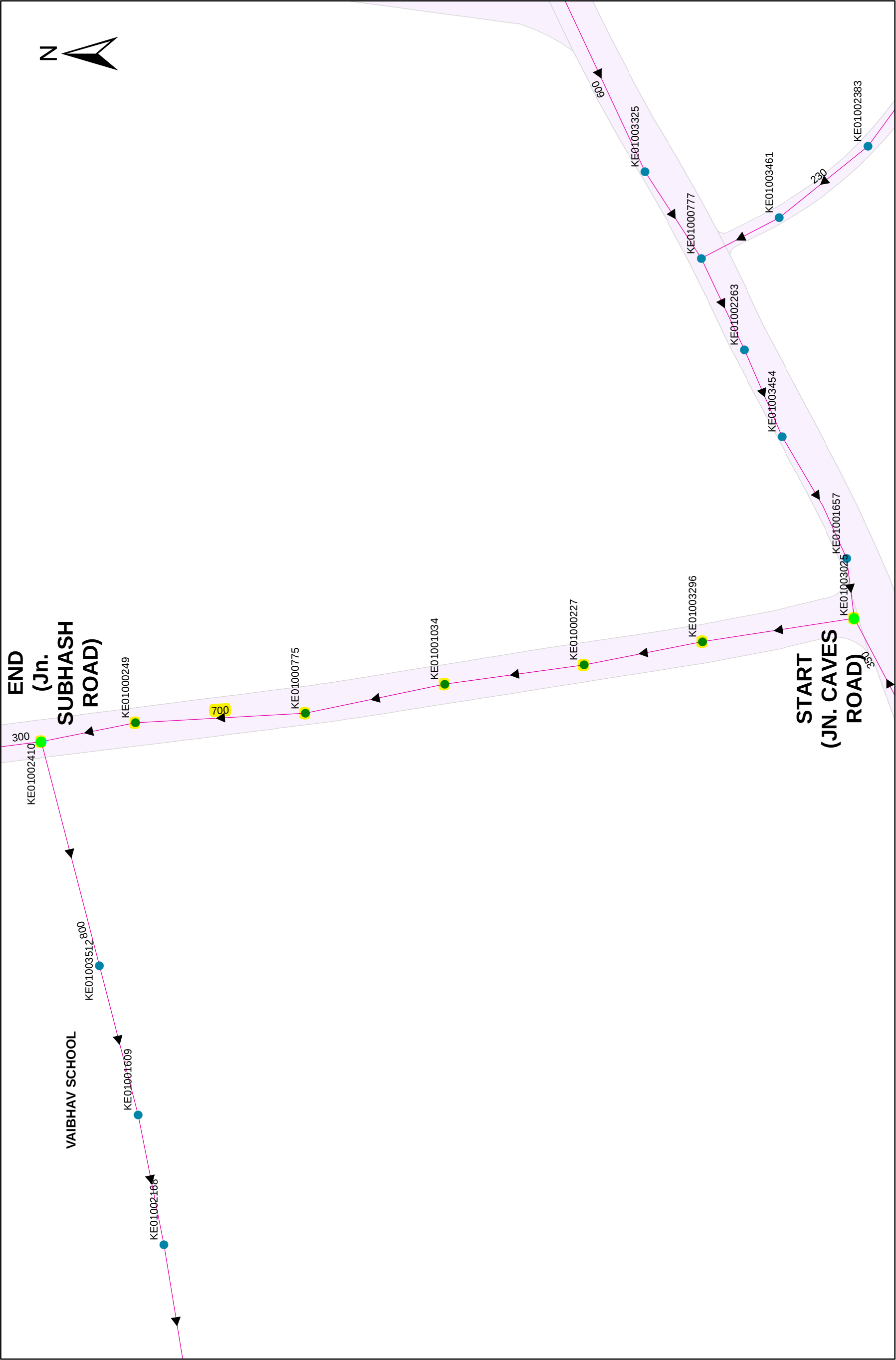
Dia. of Sewer line 600 mm and Length of Sewer Line 350 Mtr.



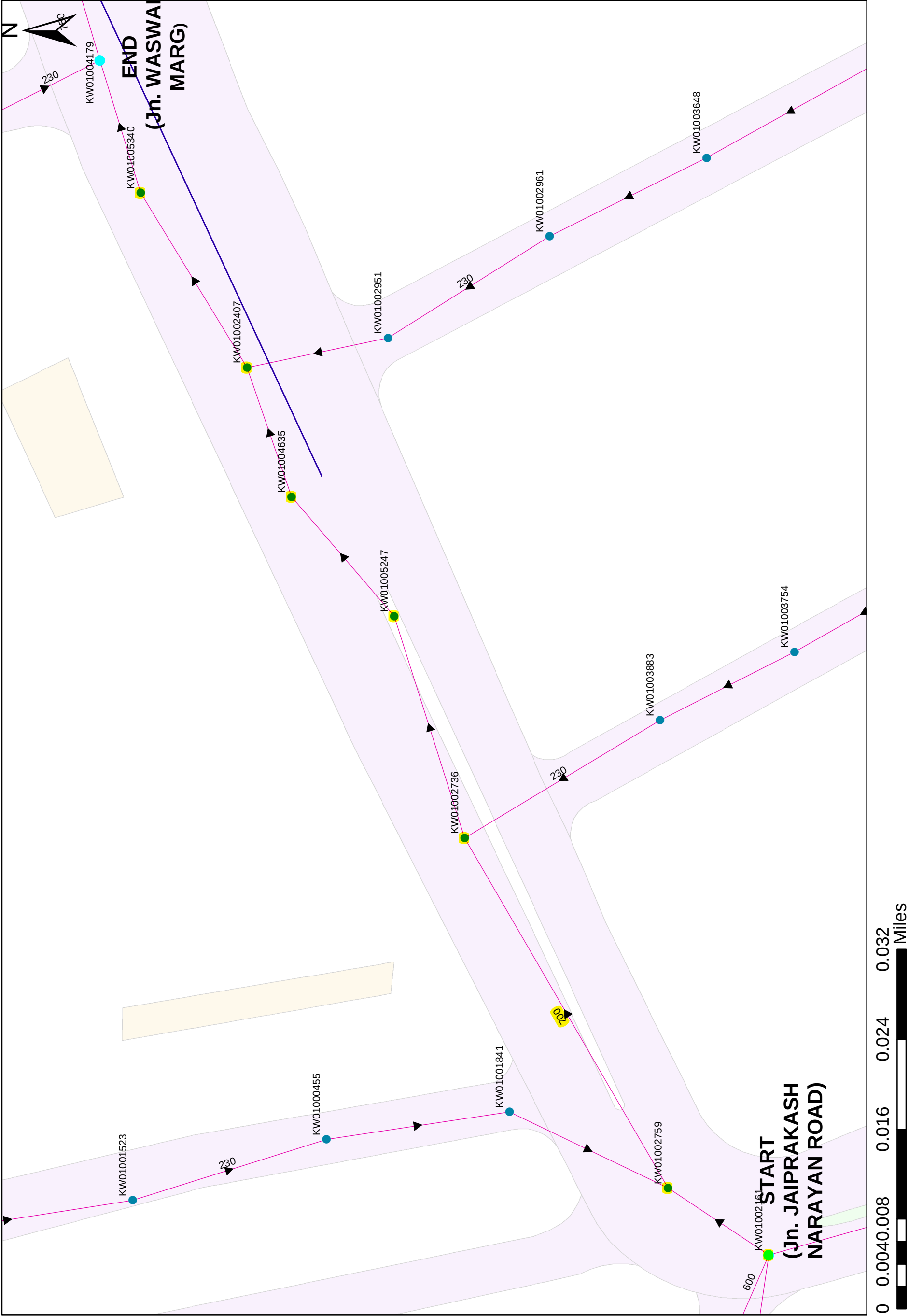
The map displays a road network with a highlighted path. The path begins at a cyan dot labeled "START" and terminates at another cyan dot labeled "END". The path is delineated by pink arrows and yellow numerical labels (450, 700) indicating specific points or distances. The network includes several roads: ST PAULS ROAD, ST ANDREWS ROAD, D MONTE ROAD, ST DOMINIC ROAD, and CHOMBAL ROAD. Numerous points along the path are labeled with unique identifiers, such as HW010000035, HW010000036, HW010000037, and so on, up to HW01001829. A north arrow is positioned in the top left corner of the map.



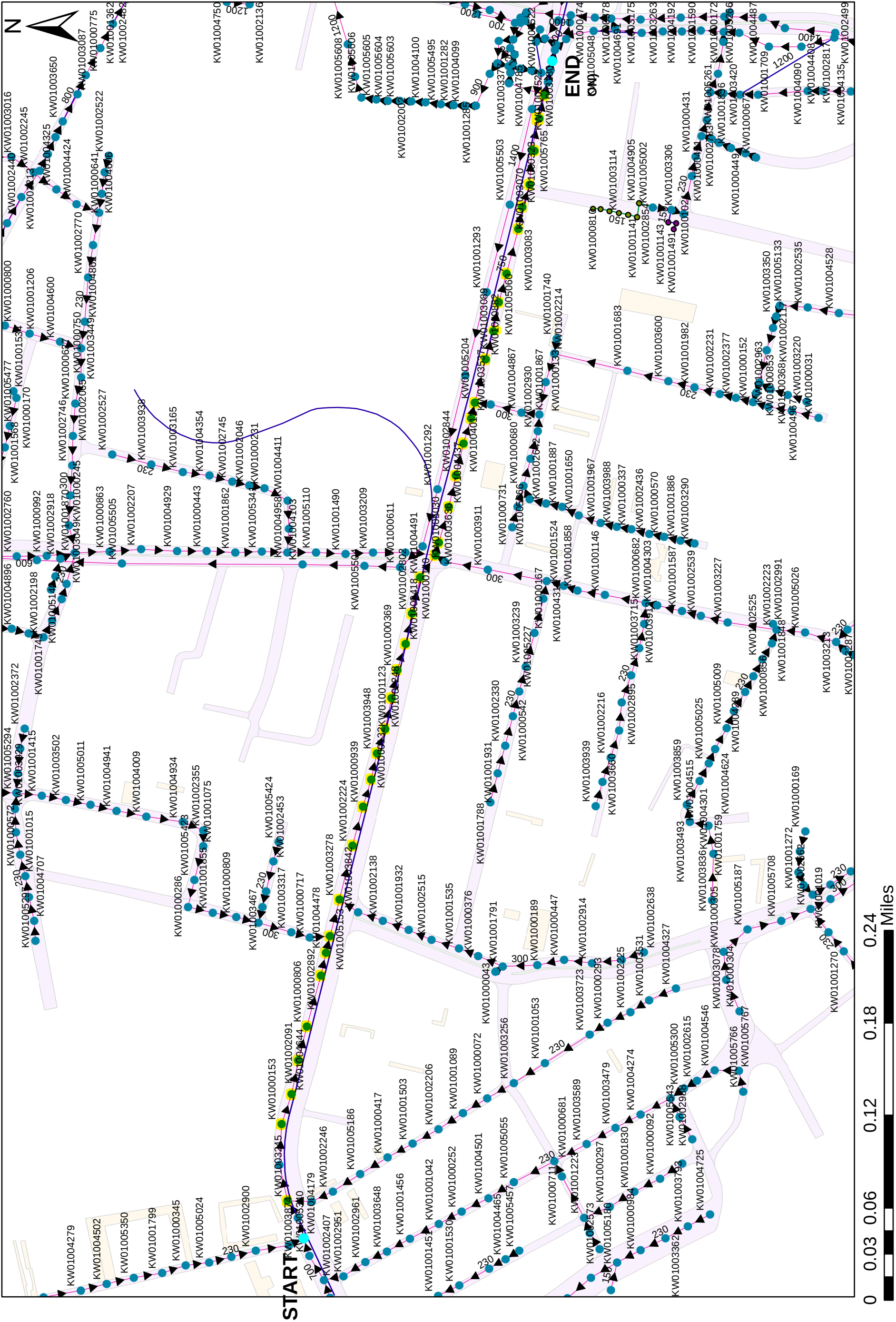
9. SUBHASH ROAD (Jn. Caves Road to Jn. Subhash Road)
(Dia. of Sewer line 700 mm and Length of Sewer Line 180 Mtr.)



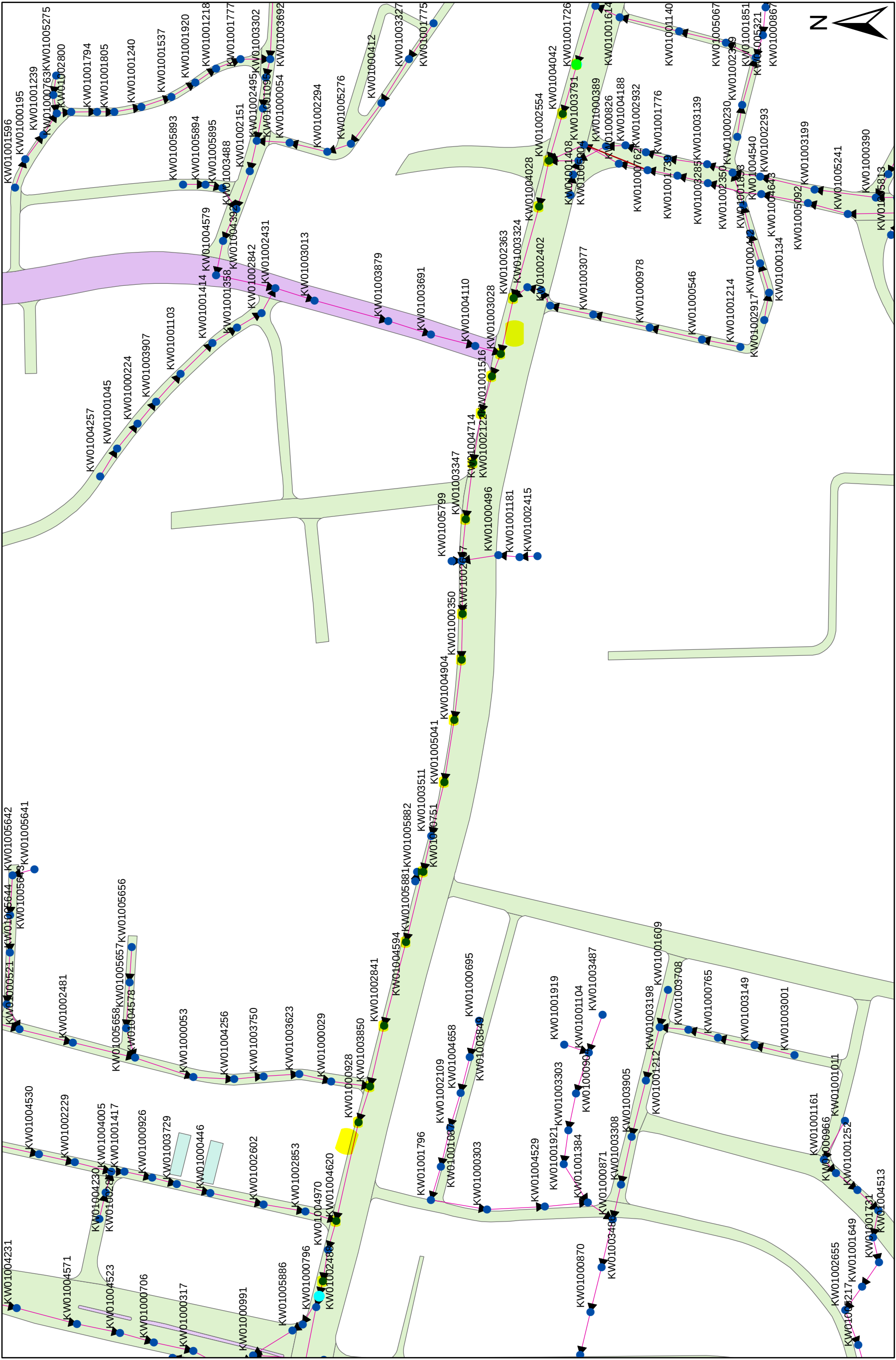
10. J. P. ROAD-1 (A-B) (From Wateshwar Mandir to Sat-Bangala Bus stop)
(Dia. of Sewer line 700 mm and Length of Sewer Line 200 Mtr.)



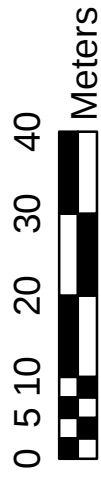
11. J. P. ROAD-1 (B-C) (From Sat-Bangala to Versova Ppg Station Near DN Nagar Metro Station)
(Dia. of Sewer line 750 mm and Length of Sewer Line 1120 Mtr.)



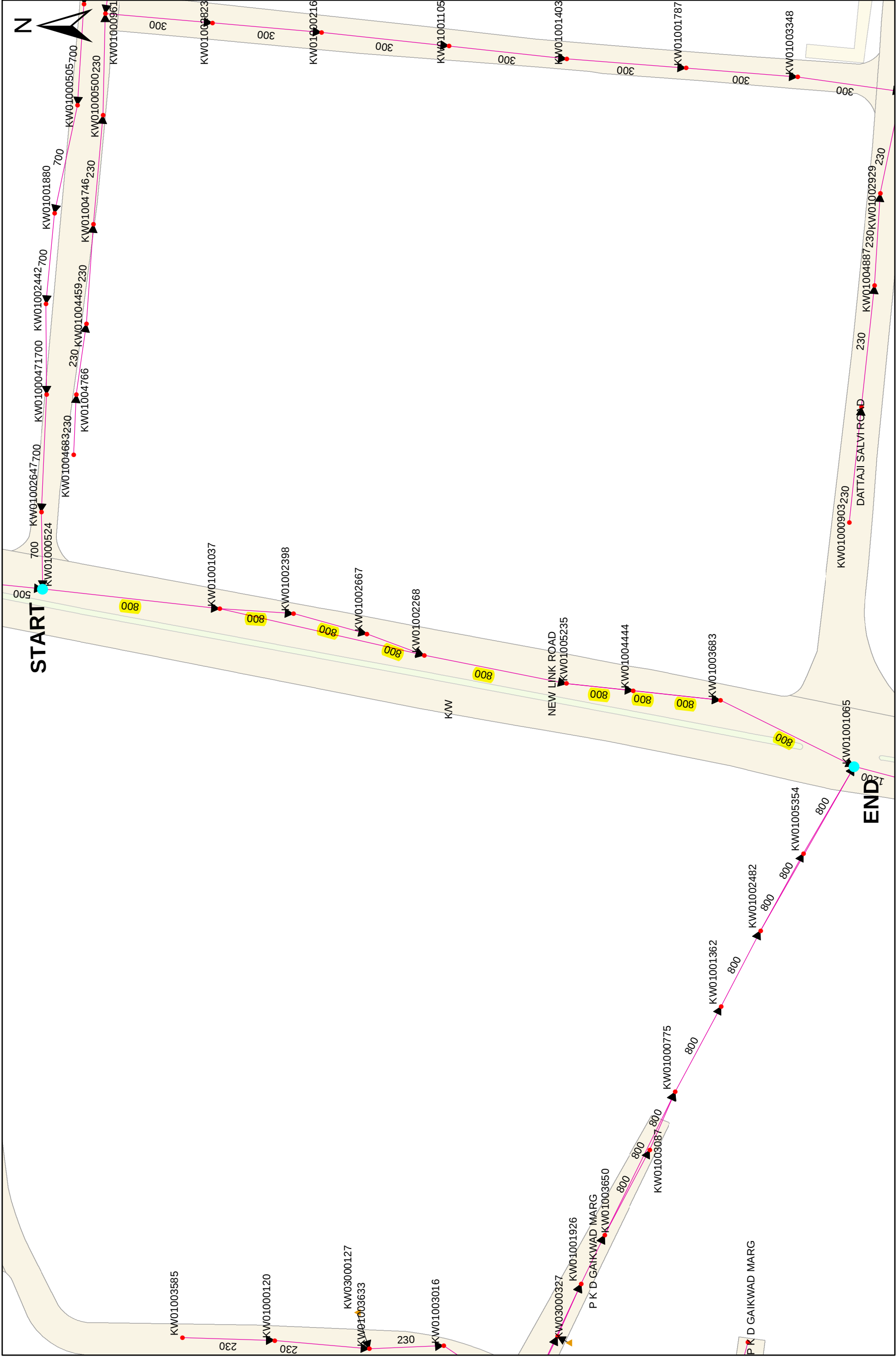
12.J.P. ROAD-2 (B-C) (From Junction of Ceaser Road to junction Box Versova Pumping)
(Dia. of Sewer line 750 mm and Length of Sewer Line 950 Mtr.)



(Dia. of Sewer line 750 mm and Length of Sewer Line 200 Mtr.)



14. K L WALAWALKAR MARG (From Jn. Shaha Industrial Estate Road to Jn. Adheri Oshiwara Link Road)
(Dia. of Sewer line 800 mm and Length of Sewer Line 300 Mtr.)



15. WEH SERVICE ROAD (From Jn. Hanuman Road to Jn. Santacruz Station Road)

Dia. of Sewer line 900mm and Length of Sewer Line 1500 Mtr.

(Jn. Hanuman Road)

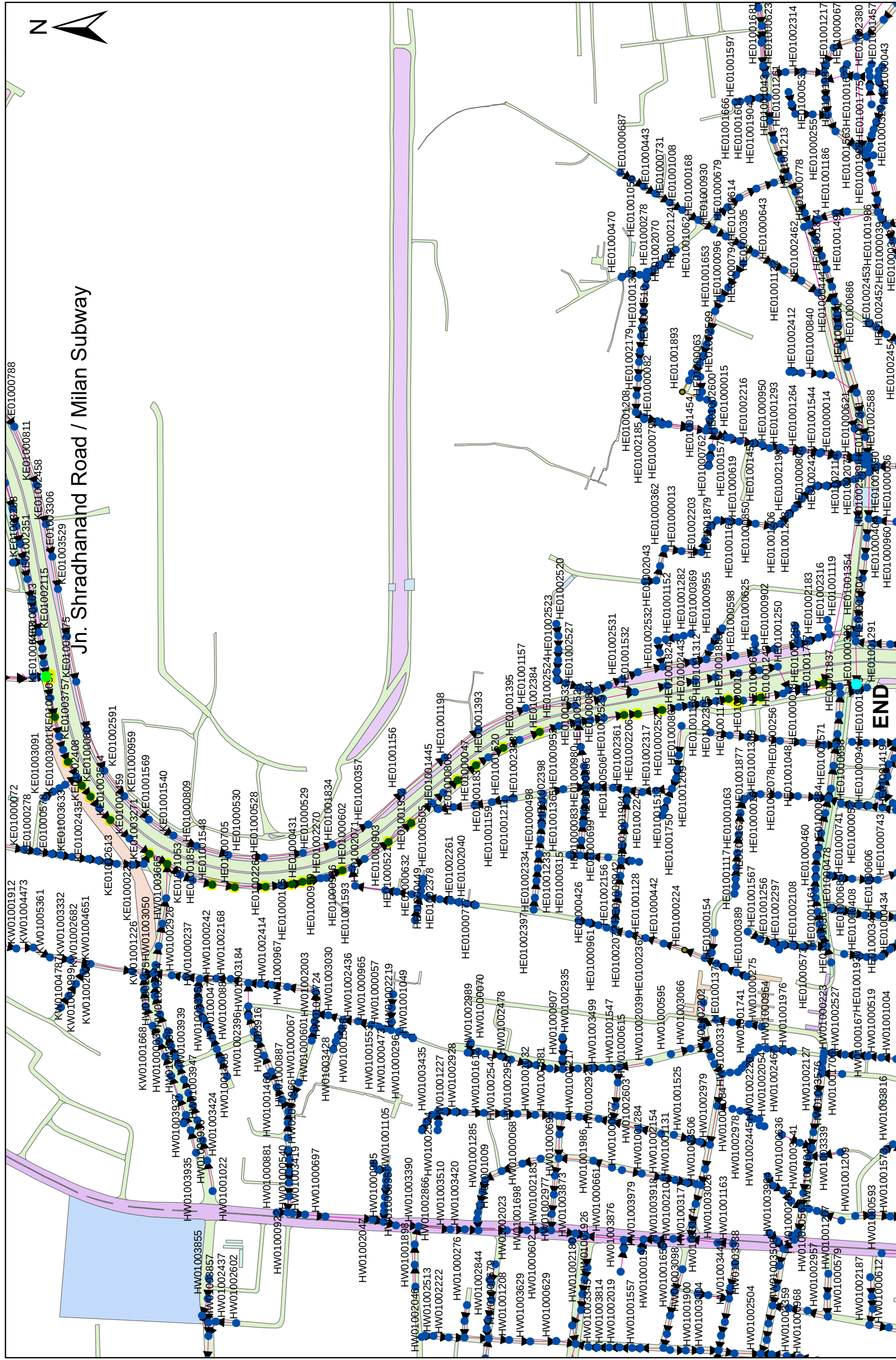


0 65 130 260 390 520

Meters

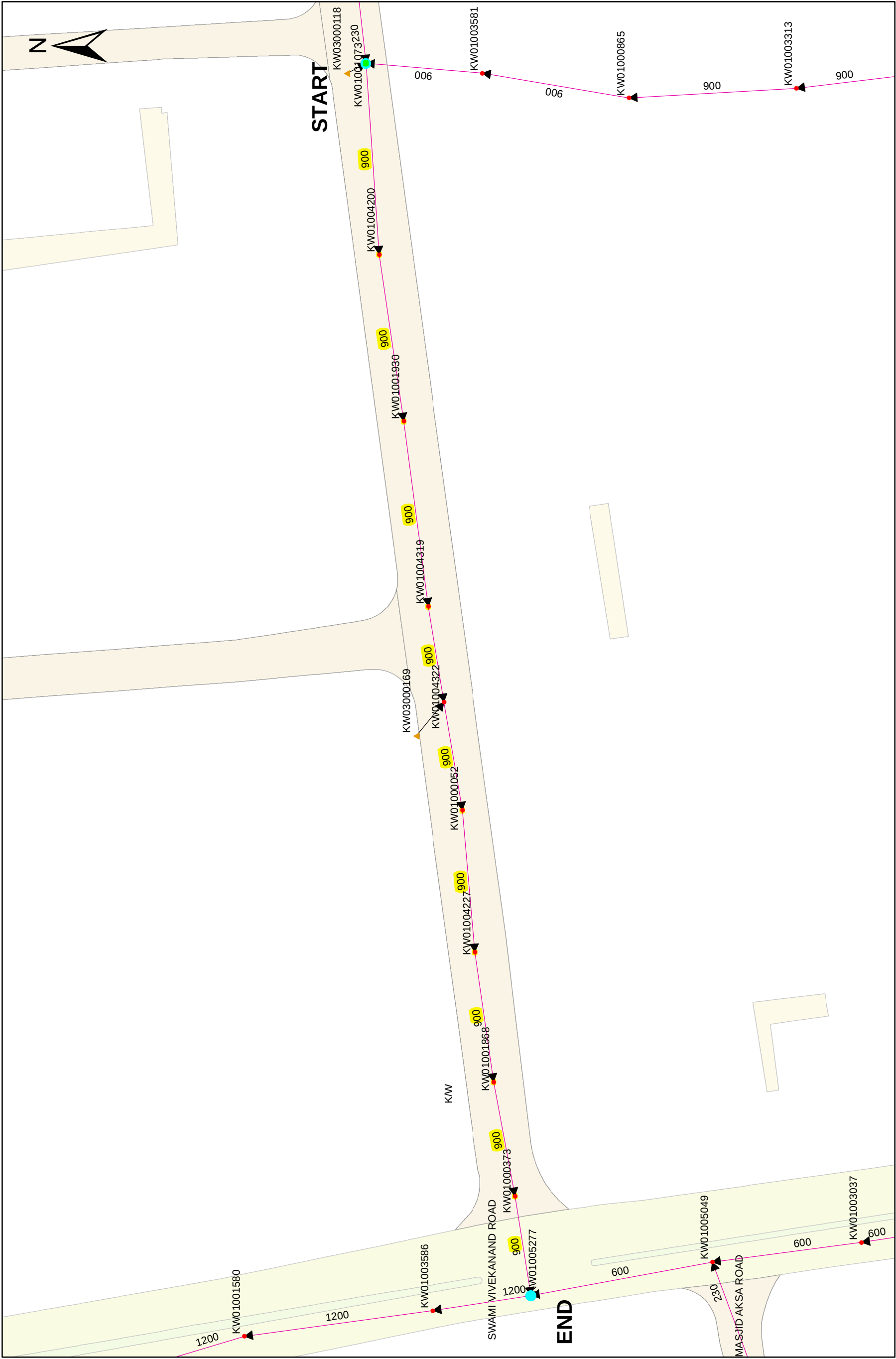
15. WEH SERVICE ROAD (From Jn. Hanuman Road to Jn. Santacruz Station Road)

Dia. of Sewer line 900mm and Length of Sewer Line 1500 Mtr.



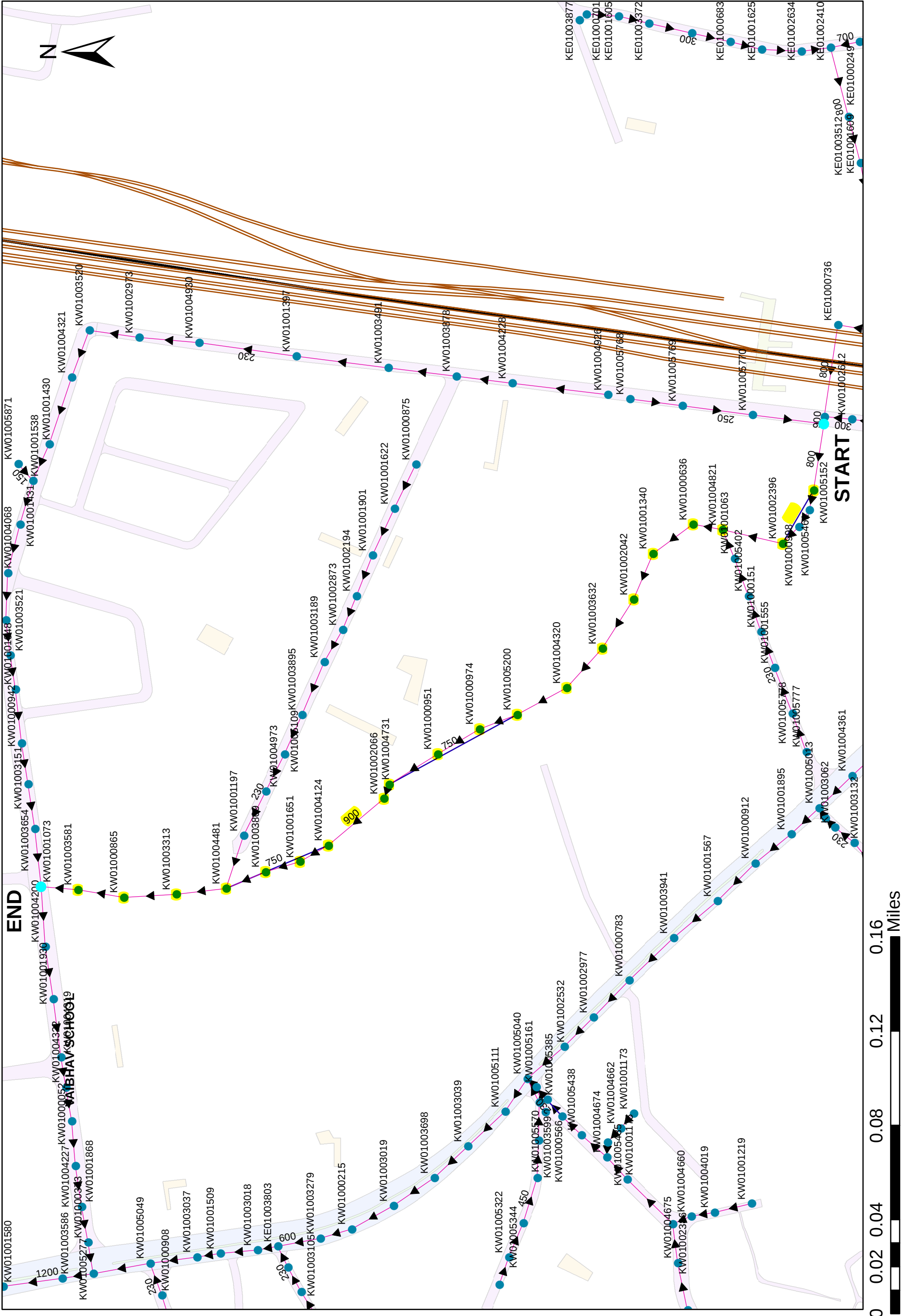
16. PATEL ESTATE ROAD (From Jn. Hazi Zahoor Qureshi Marg to Jn. S.V. Road)

Dia. of Sewer line 900 mm and Length of Sewer Line 280 Mtr



17. MOMIN GUJRAT CO-OP SOC (From Jn. Maulana Asad Madani Road to Jn. Hazi Zahoor Qureshi Marg)

Dia. of Sewer line 900 mm and Length of Sewer Line 520 Mtr

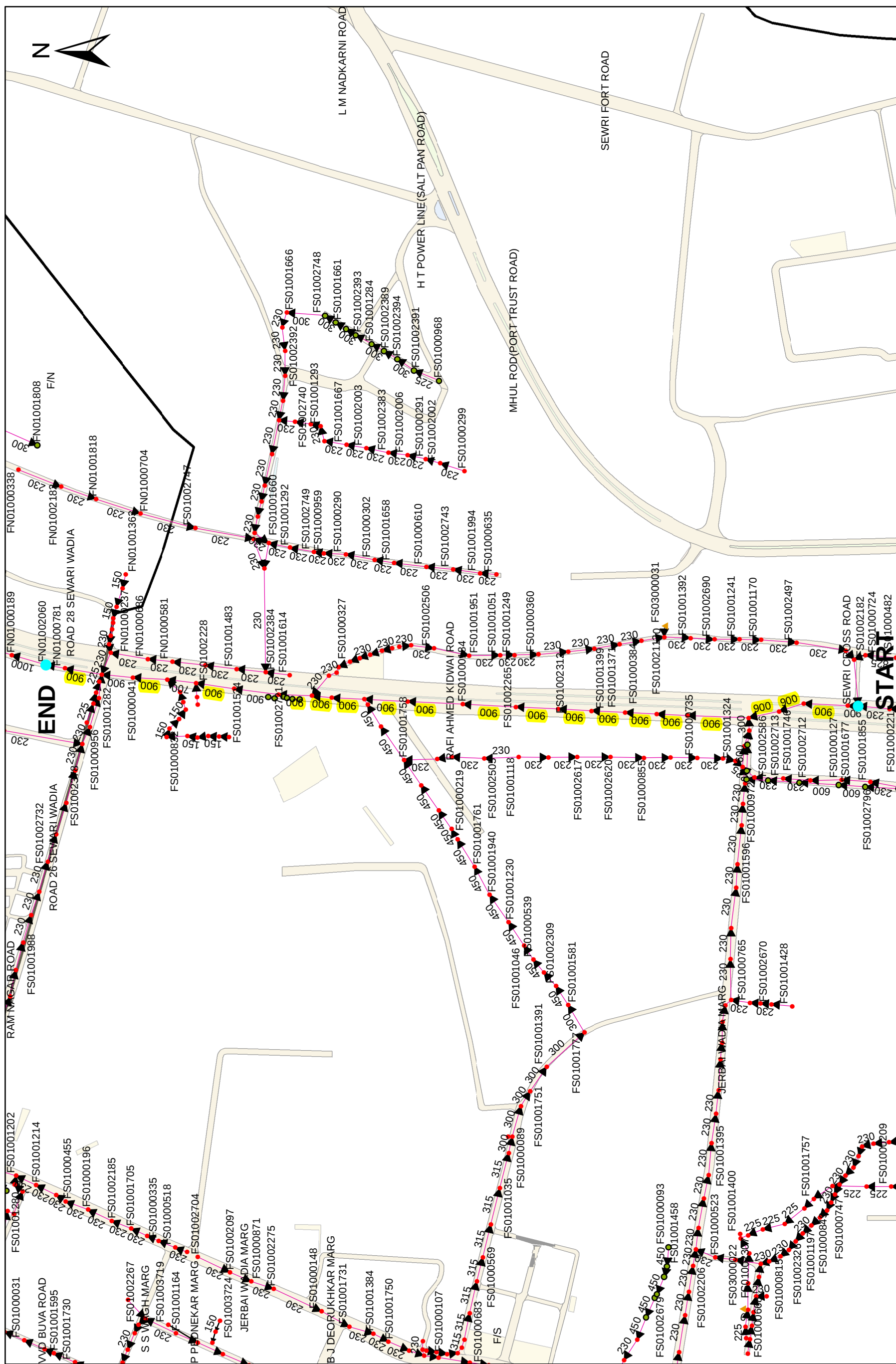


(Dia. of Sewer line 900 mm and Length of Sewer Line 300 Mtr.)



19. R. A. KIDWAI ROAD (From Jn. of Sewree Cross Road to Jn. Road No. 26/New National Market)

(Dia. of Sewer line 900 mm and Length of Sewer Line 820 Mtr.)



(Dia. of Sewer line 900mm and Length of Sewer Line 290 Mtr.)

