MUMBAI METRO RAIL CORPORATION LTD.

MUMBAI METRO LINE - 3
(COLABA-BANDRA-SEEPZ)

TENDER DOCUMENT

Name of Work : **Implementation of Multi Modal Integration Facilities at Six Underground Metro Stations viz. BKC, Bandra Colony, Santacruz, Chatrapati Shivaji Maharaj Domestic Airport (CSIA T1), Sahar Road & Chatrapati Shivaji Maharaj International Airport (CSIA T2) of Mumbai Metro Line - 3.**

Tender ID :

Tender Ref. No. : **MMRC/Planning/NIT/MMI/2024/04**

Containing total **303** pages

Issuing Authority:

Mumbai Metro Rail Corporation Limited

801 & 803, 8th Floor, Hallmark Business Plaza, Opp Gurunanak Hospital, Sant Dyaneshwar Marg, Bandra (East) Mumbai - 400051

INDEX

Certified that this Tender Document contains pages 1 to 303 (One to Three hundred and Three Only).

Authorized Signatory
(For and on Behalf of MD, MMRCL)

MUMBAI METRO RAIL CORPORATION LTD. (MMRCL)

NOTICE INVITING e-TENDER

Tender ID:

Ref. No. MMRC/Planning/NIT/MMI/20**24/04** Date: 08.10.2024

1. **Percentage Rate** online e-tenders are invited through the NIC CPP e-tendering portal by Dy. Gen. Manager (Civil), MMRCL, Mumbai, Maharashtra-400051, Ph-02269061357 (Bid Manager) on behalf of Director (Planning), MMRCL, MUMBAI from eligible contractors who fulfill the Pre-Qualification criteria in Two Bid System for the work of "**Implementation of Multi Modal Integration Facilities at Six Underground Metro Stations viz. BKC, Bandra Colony, Santacruz, CSIA T1, Sahar Road & CSIA T2 of Mumbai Metro Line-3 project at an estimated cost of 14,17,15,320/- (Rupees Fourteen Crores seventeen lacs fifteen thousand and three hundred and twenty only) (Excluding GST)** with period of completion 100 days (One hundred days) with 24 Month Defect Liability Period (DLP) for footpath works and 24 Month DLP for Painting of Kerbstone, divider, lane markings/ arrow markings/ zebra crossing/ road signs, road furniture etc.

Name of Work and Location	Implementation of Multi Modal Integration Facilities at Six Underground Metro Stations viz. BKC, Bandra Colony, Santacruz, CSIA T1, Sahar Road & CSIA T2 of Mumbai Metro Line-3 project.
Description of Work	Appointment of Contractor for Implementation of Multi Modal Integration Facilities at Six Underground Metro Stations viz. BKC, Bandra Colony, Santacruz, CSIA T1, Sahar Road & CSIA T2 of Mumbai Metro Line-3 project.
Estimated Cost	Rs. **14,17,15,320/-** (Excl. GST)
Earnest Money Deposit	Rs. **14,17,153/-**
Security Deposit	Nil
Retention money	5% of the RA cum Final Bill
Performance Guarantee	5% of the Awarded Contract Value
Period of Completion	**100 days (One hundred days)**
Last date and time of submission of bid	06.11.2024 upto 1800 hrs.

Bids shall be submitted online only at CPP website	https://etenders.gov.in/eprocure/app
Addendum & Corrigendum, if any will be issued only on website	https://etenders.gov.in/eprocure/app & www.mmrcl.com

The tendering process is online at CPP-portal URL address **https://etenders.gov.in/eprocure/app.** Prospective Tenderers may download and go through the tender document.

Prospective Tenderers are advised to register themselves at CPP-portal, obtain 'Login ID' and 'Password' and go through the instructions available in the Home Page after log in to the CPP-portal **https://etenders.gov.in/eprocure/app** They should also obtain Digital Signature Certificate (DSC) in parallel which is essentially required for submission of their application. The process normally takes 03 days' time.

MMRCL Helpdesk:

In case of any queries, Bidders may contact MMRC's e-tendering service desk at
Mr. Pravin Ambulgekar (Email:- pravin.ambulgekar@mmrcl.com, Mob:- +918552856333)
Ms. Sushmita Kapadnis (Email:- cpppsupport@mmrcl.com, Mob:- +919579367223)

CPP Helpdesk:

For any technical related queries please call at 24 x 7 Help Desk Number:
0120-4001 002, 0120-4001 005, 0120-6277 787
International Bidders are requested to prefix +91 as country code

Email Support:
For any Issues or Clarifications relating to the published tenders, bidders are requested to contact the respective Tender Inviting Authority
Technical - support-eproc@nic.in
Policy Related - cppp-doe@nic.in

There will be no tender processing fees.

Earnest Money Deposit (EMD) **of ₹ 14,17,153.00 (Rupees Fourteen Lakh Seventeen Thousand One Hundred Fifty-Three Only)** will be required to be paid online session

Beneficiary	**MUMBAI METRO RAIL CORPORATION LIMITED**
Bank Name	**STATE BANK OF INDIA**
Current A/C no	**35160137534**
IFSC Code	**SBIN0000300**
Branch	**MUMBAI MAIN BRANCH**

Account details of bidder on company's letter head to be uploaded online for return of EMD

2. Following 02 envelopes shall be submitted through online at CPP-portal by the tenderer as per the following schedule: -

CRITICAL DATA SHEET

Publishing Date	Date 09.10.2024
Bid Document Download / Sale Start Date	Date 10.10.2024 from 0928 hrs.
Clarification Start Date	Date 10.10.2024 from 0928 hrs.
Clarification End Date	Date 25.10.2024 upto 1280 hrs.
Bid Submission Start Date	Date 10.10.2024 from 0928 hrs.
Bid Submission End Date	Date 06.11.2024 upto 1800 hrs.
Pre-Bid Meeting Date	Date 18.10.2024 at 1200 hrs.
Bid Opening Date (Envelope- I)	Date 08.11.2024 at 1200 hrs.
Bid Opening Date (Envelope- II)	Date 14.11.2024 at 1600 hrs. Tentative or Will be intimated through CPP Portal and MMRC Portal(www.mmrcl.com)

The venue for Pre-bid Meeting will be: 801 & 803, 8th Floor, Hallmark Business Plaza, Opp Gurunanak Hospital, Sant Dnyaneshwar Marg, Bandra (East), Mumbai – 400051.

Alternatively, bidders can send their queries to Mr.Samir Rathod, CEA at sameer.rathod@mmrcl.com till Clarification End Date. No queries will be entertained after that.

Technical Capabilities/Criteria: The Bidders who fulfil the following requirements shall be eligible to apply-

Envelope-I (Technical Bid and Pre-qualification): - Bid containing following:

A. **Technical Bid** containing the following: -

i) Scanned copy of Tender Acceptance Letter on Bidder's Letter Head.

ii) Scanned copy of Permanent Account Number (PAN) and GST Registration Number.

iii) Scanned copy of 'Undertaking' regarding Blacklisting/ Debarment on Bidder's Letter Head.

iv) Scanned copy of Form- A - details of similar works completed during last five years with completion certificate issued by client.

v) Scanned copy of Form- B - Financial Information.

vi) Scanned copy of Form- C – Net Worth.

vii) Scanned copy of Form- C – Solvency.

viii) Bidder shall submit scanned copy of 'Undertaking' on Company's Letter Head that "I/ We will deploy sufficient plant and machinery as per the requirement of work in

consultation with the Engineer-in-Charge (E-I-C) to achieve the milestones/targets and overall completion within the time period".

ix) Bidders other than propriety firm shall submit, scanned copy of Authorization Letter/Power of Attorney along with copy of Certificate of Incorporation of the Company under Companies Act showing CIN/LLPIN/Name of Directors of the Company & Copy of Board Resolution regarding Authority to assign Power of Attorney. Proprietary firm shall submit scanned copy of Authorization Letter/Power of Attorney only if the tender is processed by a person other than proprietor.

x) Scanned copy of EPF & ESIC registration certificate (in case of EPF & ESI registration certificate are not available with the bidder while submitting the tender, the bidder shall submit the undertaking letter.

xi) Undertaking for GST.

xii) Bidder shall submit scanned copy of valid registration under appropriate class with the Government of Maharashtra or other State Governments / Government of India or State / Central Government Undertaking.

xiii) Checklist / PQ Performa duly filled.

B. Qualifying requirements of contractors / tenderers containing the following:

a) Should have satisfactorily completed (Phase / Part completion of the scope of work in a contract shall not be considered, however pre-determined phasing of the work will be accepted) the works as a Prime Contractor mentioned below during the last Five years ending last day of month before the one in which bids are invited. The details of similar works completed during last five years in the given format Form-A with supporting documents issued by client.

i. Three similar **(*)** works each costing not less than 40% of the Estimated Cost put to tender.

Or

ii. Two similar **(*)** works each costing not less than 50% of the Estimated Cost put to tender.

Or

iii. One similar (*) work costing not less than 80% of the Estimated Cost put to tender.

(*) Similar work means all kind of road works which includes footpaths, street furniture, road signage etc. (Scanned copies of Completion certificate certified by Executive Engineer or equivalent authority and for Private works certificate issued by concerned Architect along with Completion certificate to be uploaded).

In addition to above,

a) Bidder should be a Civil Contractor who is authorized converter from any govt. /semi-govt. approved retro reflective sheeting manufacturer and completed similar work of

street furniture & traffic signage's in Semi Govt. /Govt. & Public Sector Organizations. A current dated authorized converter certificate shall be submitted by the bidders which shall be attested by the sheeting manufacturer for this specific tender.

b) Prequalification warranty for 10 years for Type-XI from the manufacturer of retro reflective sheeting as per clause 6.9 of IRC-67 -2012 shall be submitted by the bidder during the bid submission.

c) A certificate of having the sheeting tested for coefficient of retro reflections daytime color and luminance, shrinkage, flexibility, liner removal, adhesion, impact resistance, specular gloss and fungus resistance, 3 years outdoor weathering and its having passed these tests shall be obtained from International and Indian Government Laboratory/Institute by the sheeting manufacturer. Alternatively, a certificate conforming to ASTM Specification (D 4956-09) on artificial accelerated weathering requirements from a reputed laboratory in India can be accepted provisionally. In such a situation, the OEM of the retro reflective sheeting must submit a performance guarantee from the nationalized bank for the full tender value which would be released after receipt of certificate meeting the requirement of three years outdoor weathering of the sheeting.

d) Bidder shall pose 4 feet hand squeeze roller applicator for pasting retro reflective sheeting with substrate. Proof of evidence shall be submitted by the bidder.

e) The bidder shall produce a declaration from the manufacturer of retro reflective sheeting that reflectivity of all types of sign boards including digitally printed sign boards shall be tested in a periodic interval of 2 years at free of cost at 0.2, 0.5 & 1 degree observation angles till the end of guarantee period and prove to the government authority that the reflectivity of the retro reflective sheeting is still more than the specified minimum values of coefficient of reflectivity as specified in IRC 67 2012. The sign boards to be tested as directed by M.C.G.M and report of the same shall be submitted.

f) The bidder shall be able to provide two years of pre-qualification warranty for road furniture such as Road studs/Cat's eye/Flexible median marker from the manufacturer of road furniture. The test reports of the same shall be submitted.

g) For digital printing, the signs shall be manufactured using a system of matched components of reflective sheeting and overlay films and digital inks approved by the reflective sheeting manufacture. Digitally printed traffic color (red, blue, green, yellow, orange and brown) areas on white sheeting shall not be having less than 70 percent of the value of the coefficient of retro reflection established for its color and type of sheeting as given in Table 6.9 of IRC 67.

h) The bidder shall submit the declaration from manufacturer of retro reflective sheeting that the inks used for printing shall be certified for low volatile organic compound

(VOC) emission confirming to UL 2801/ UL 2818 (standard for sustainability for printing inks) shall be submitted along with Green Guard Certificate.

Should have bidding capacity equal to or more than the estimated cost of the work put to tender. The bidding capacity shall be worked out by the following formula:

Bidding Capacity = **{[AxNx1.5]-B}**

Where,

A = Maximum turnover in construction works executed in any one year during the last five years taking into account the completed as well as works in progress. The value of completed works shall be brought to current costing level by enhancing at a simple rate of 7% per annum.

N = Number of years prescribed for completion of work for which bids have been invited. (Less than 6 month to be taken half year and more than 6 month to be taken as 1 year) *

B = Value of existing commitments and ongoing works to be completed during the period of completion of work for which bids have been invited.

Financial Capabilities/Criteria:

i) Should have had an average annual **financial turnover** of not less than 30% of the Estimated Cost put to tender during the three financial years ending 31st March 2023. (Scanned copy of Certificate from CA to be uploaded)

ii) Should not have incurred any loss during the last three years ending 31st March 2023.

iii) The bidder should have a **solvency** of 40% of the estimated cost put to tender (Scanned copy of original solvency to be uploaded) for the current financial year.

iv) The **Net worth** of Bidder firm (or principal of authorised representative) should not be negative on 'The Relevant Date' and should not have eroded by more than 28% in the last 3 years, issued by certified Chartered Accountants. The Certificate should be submitted in the given format- Form-C.

Note:

1) Experience gained by executing work on back-to-back contract/ Sub-contract basis is acceptable in the following conditions:

(a) Work should be actually executed by the second agency (sub-contractor) with due concurrence of the owner as tripartite agreement/ written approval. It should be backed by valid agreement and experience certificate.

(b) Payments received by second agency should be reflected in TDS certificates.

Experience gained in composite works for the specialized nature of works were executed by main contractor either by in-house expertise & experience or by engaging the specialized agencies with the approval of main client as per contract conditions. In such cases, main contractor as well as specialized agency both gets the experience certificate for the same work from their respective client(s) i.e. main contractor for composite work along with specialized works from owner and specialized agency for specialized work(s) from the main contractor.

In this situation, the experience certificate of either specialized agency or main agency

having in-house expertise & experience, who has actually executed the specialized work(s), shall be considered for Technical /Pre-qualifying criteria in similar specialized nature of work(s).

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to previous day of last day of submission of bids.

Client certificate for experience should show the nature of work done, the value of work, date of start, date of completion as per agreement, actual date of completion and satisfactory completion of work. Tenderers showing work experience certificate from non-government/non-PSU organizations should submit copy of tax deduction at sources (TDS) certificate(s) along with a certificate issued by registered Chartered Accountant, clearly specifying the name of work, total payment received against the work and TDS amount for the work.

Firm shall submit EPF and ESIC registration certificate. In case, firm do not possess the EPF & ESIC registration, firm is required to submit the undertaking regarding getting themselves registered with EPF & ESI authorities, if becomes L-1 before commencement of work.

Tenderers have to submit the Undertaking for GST and compliance of its provision (as per Annexure enclosed in tender Document)

Envelope-II: - The Financial e-Bid through CPP portal.

All rates shall be quoted in the format provided and no other format is acceptable. If the price bid has been given as a standard BOQ format with the tender document, then the same is to be downloaded and to be filled by all the tenderers. Tenderers are required to download the BOQ file, open it and complete the blue coloured (unprotected) cells with their respective financial quotes and other details (such as name of the tenderer). No other cells should be changed. Once the details have been completed, the tenderer should save it and submit it online, without changing the filename. If the BOQ file is found to be modified by the tenderer, the bid will be rejected.

3. Refund of EMD

EMD amount of the rejected bidders will be refunded to their source account after submission of Technical / Financial evaluation report on CPP portal by bid Manager.

4. Bid Submission: -

The tenderer shall submit their application only at CPP Portal: https://etenders.gov.in/eprocure/app. Tenderer/Contractor are advised to follow the instructions provided in the tender document for online submission of bids. Tenderers are required to upload the digitally signed file of scanned documents as per Para 2. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.

Uploading of application in location other than specified above shall not be considered.

Hard copy of application shall not be entertained.

5. Not more than one tender shall be submitted by one tenderer or tenderers having business relationship. Under no circumstance will father and his son(s) or other close relations who have business relationship with one another (i.e. when one or more partner(s)/director(s) are common) be allowed to tender for the same contract as separate competitors. A breach of this condition will render the tenders of both parties liable to rejection.

6. Tenderer who has downloaded the tender from Central Public Procurement Portal (CPPP) website http://etenders.gov.in/eprocure/app, shall not tamper/modify the tender form including downloaded price bid template in any manner. In case if the same is found to be tampered/modified in any manner, tender will be completely rejected and EMD would be forfeited and tenderer is liable to be banned from doing business with MMRCL.

7. Bids Opening Process is as below: -

Envelope-I (Technical bid and Pre-qualification):

Envelope-I containing documents as per Para 2 (A) and (B) (uploaded by the tenderers) shall be opened on date & time mentioned in CRITICAL DATA SHEET.

If the bidder has any query related to the Bid Document of the work, they should use 'Seek Clarification' on CPP portal to seek clarifications. No other means of communication in this regard shall be entertained.

If any clarification is needed from the tenderer about the deficiency in his uploaded documents in Envelope – I, he will be asked to provide it through CPP portal, if required. The tenderer shall upload the requisite clarification/documents within time specified by MMRCL, failing which it shall be presumed that bidder does not have anything to submit and bid shall be evaluated accordingly.

The intimation regarding acceptance/rejection of their bids will be intimated to the tenderers through CPP portal.

Envelope-II (Financial Bid):

Envelope-II containing financial bid of the tenderers found to be meeting the technical criteria and qualifying requirements shall be opened on date & time mentioned in CRITICAL DATA SHEET. (In case the date and time for opening of Envelope-II (Financial bid) is required to be changed, the same shall be intimated through CPP Portal).

8. MMRCL reserves the right to accept or reject any or all applications without assigning any reasons. MMRCL also reserves the right to call off tender process at any stage without assigning any reason.

MMRCL reserve the right to disallow the working agencies whose performance at ongoing project (s) is below par and usually poor and has been issued letter of restrain/ Temporary/ Permanent debarment /blacklisting by any department of MMRCL or central/State Govt. Depts. /PSUs/World Bank/ADB etc.

9. MMRCL reserves the right to verify the credential submitted by the tenderer at any stage (before or after the award the work). If at any stage, any information /documents submitted by the applicant is found to be incorrect/false or have some discrepancy which disqualifies the tenderer then MMRCL shall take the following action:

a) Forfeit the entire amount of EMD submitted by the tenderer.

b) The tenderer shall be liable for debarment from tendering in MMRCL, including termination of the contract apart from any other appropriate contractual/legal action.

10. Joint Bids /Joint ventures/Consortium are not accepted.

11. Concessions to Indian Micro & small Enterprises (MSEs) units registered with DIC/NSIC/KVIC/KVIB/Directorate of Handicraft and handloom etc. to be given as per provision of public procurement policy for MSEs order 2012 with up-to-date amendments, shall be applicable for tenders of supply/services and shall not be extended to construction work.

12. Tenderers have to submit Unique Document Identification Number (UDIN) generated documents like Balance Sheet / Turnover certificate, Working Capital Certificate (works done during last 5 financial years & works in hand), Net worth Certificate, Tax Deduction at Source (TDS) Certificates for Non- Govt. works etc. as per NIT conditions duly certified by CA and having UDIN. The documents submitted by bidders without UDIN shall not be entertained.

13. The bidder shall have one of the offices at Mumbai Metropolitan Region (MMR).

14. The site for the work is available. The site for the work is in a congested area and there are constraints in the working space available for plants, equipment, storage of material, labour camp etc.

15. The drawing shall be made available to the Contractor by the Employer as per the approved Program of completion submitted by the Contractor.

16. Intending Tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, the means of access to the site, and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender.

17. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed.

18. The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity, access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents.

19. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of local conditions and other factors having a bearing on the execution

of the work.

20. The bid for the works shall remain open for acceptance for a period of 120 days from the date of opening of bids. If any bidder withdraws his bid before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the bid which are not acceptable to the department, then the MMRCL shall, without prejudice to any other right or remedy, be at liberty to forfeit the earnest money as aforesaid. Further, the bidders shall not be allowed to participate in the rebidding process of the work.

21. The lowest Contractor will have to submit the rate analysis of all major items if called for.

22. Bidder should upload scanned attested photocopies of all documents on above mentioned CPP portal & produce in original on request by MMRC at any stage from e-Tender opening.

23. Awarded Contractor shall have to submit signed copy of tender manually to the department.

24. Validity period of the offer of the Contractor will be 120 days from the date of submission of the financial bid of the e-Tender.

25. Bidder to submit their work plan, details methodology to be adopted for this work.

26. In case any discrepancy is noticed between the documents issued and submitted, then the bid submitted shall become invalid and the MMRCL shall, without prejudice to any other right or remedy, be at liberty to forfeit the earnest money as aforesaid. Further the tenderer shall not be allowed to participate in the retendering process of the work.

27. The last date of bid submission shall be (As per and technical bid shall be opened on "as per **CRITICAL DATA SHEET**".

28. This notice inviting the Tender shall form a part of the contract document. The successful tenderer, on acceptance of his tender by the Accepting Authority shall within 21 days from the stipulated date of start of the work, sign the contract consisting of: -

The notice Inviting Tender, all the documents including additional conditions, specifications, and drawings, if any, forming part of the tender as submitted at the time of invitation of tender and the rates quoted at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.

The agreement shall be signed with the successful tenderer on prescribed format which is enclosed at **Annexure-XI.**

29. The Contractor whose bid is accepted will be required to furnish performance guarantee of 5% (Five Percent) of the Accepted Contract amount within the period specified in General Conditions of Contract. This guarantee shall be in the form of Bank Guarantee or Demand Draft of any Scheduled commercial Bank. In case the Contractor fails to deposit the said performance guarantee within the period specified in General conditions of Contract, including the extended period if any, the Earnest Money deposited by the Contractor shall be forfeited automatically without any notice to the Contractor. The Contractor whose bid is accepted will also be required to furnish either copy of applicable licenses / registrations or proof of applying for obtaining labour licenses, registration with EPFO, ESIC and BOCW Welfare Board including provident Fund code No. if applicable and also ensure the compliance of aforesaid provisions by the Sub-Contractors, if any.

30. Canvassing, whether directly or indirectly, in connection with tenderers is strictly prohibited and the tenders submitted by the Contractors who resort to canvassing will be liable to rejection.

31. The Contractor shall not be permitted to tender for works in the MMRCL responsible for award and execution of contracts, in which his near relative is posted as an officer in any capacity of any grades. He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any officer in the MMRCL or in the Ministry of Urban Development, Maharashtra. Any breach of this condition by the Contractor would render him liable to be removed from the approved list of Contractors of this Department.

32. MMRCL reserves the right to disallow the working agencies whose performance at ongoing project (s) is below par and usually poor and has been issued letter of restrain/Temporary or Permanent debarment/blacklisting by any department of MMRCL or Central /State Govt. Depts./PSUs/World Bank/ ADB etc.

33. MMRCL does not bind to accept the lowest or any other tender and reserves the authority to reject any or all the tenders received without the assigning any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is out forth by the tenderer shall be summarily rejected.

34. MMRCL reserves to himself /herself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the percentage rates quoted.

35. MMRC reserves the right to verify financial transaction of contractor in his Bank / Financial Institutions. Contractor should give authority to that effect along with his accounts number and Bank/ Financial institution name & address. Any changes / modification may be communicated to MMRC immediately.

Sd/-
Dy. General Manager (Civil)
For and on behalf of Director (Planning),
Mumbai Metro Rail Corporation Ltd.

CHECK LIST / PQ Performa

(TO BE UPLOADED BY THE BIDDER ALONG WITH TENDER APPLICATION)

Name of work: Implementation of Multi Modal Integration Facilities at Six Underground Metro Stations viz. BKC, Bandra Colony Santacruz, CSIA T1, Sahar Road & CSIA T2 of Mumbai Metro Line-3 project

S. No	Particulars	ATTACHMENTS / ENCLOSURES CHECK LIST (to be uploaded / enclosed)	
1.	Name & registered office Address of the Applicant.		
2.	Name, address, telephone, Fax No., email address of the authorized contact person of the agency for further communication.	Name:	
		Address:	
		Ph. No.:	
		Mobile No.:	
		Fax No.:	
		E-mail ID:	
3.	**ENVELOPE –I** :		
	Technical Bid containing the following: -		
i)	Scanned copy of Tender Acceptance Letter on Bidder's Letter Head.	Format given as Annexure I in Tender document.	Scanned Copy uploaded. **YES/NO**
ii)	Scanned copy of Permanent Account Number (PAN) and GST Registration Number.	Scanned copy of Permanent Account Number (PAN) & GST Registration Number	Scanned Copy uploaded. **YES/NO**
iii)	Scanned copy of 'Undertaking' regarding Blacklisting/ Debarment on Bidder's Letter Head.	As per Annexure-II	Scanned Copy uploaded. **YES/NO**
iv)	Scanned copy of Form- A - details of similar works completed during last five years with completion certificate issued by client. (As per NIT)	Format given as Form-A in Tender document.	Scanned Copy uploaded. **YES/NO**
v)	Scanned copy of Form-B- Financial Information.	Format given as Form-B in Tender document.	Scanned Copy uploaded. **YES/NO**
vi)	Scanned copy of Form- C –Net Worth	Format given as Form-D in Tender document.	Scanned Copy uploaded. **YES/NO**
vii)	The bidder should have a solvency of 40% of the estimated cost put to tender.	Scanned copy of original solvency to be uploaded for the current financial year	Scanned Copy uploaded. **YES/NO**
viii)	Whether Experience from Govt./Non-Govt./ Non-PSU organizations	Govt. Organization/Private Clients (Tick whichever is applicable in case experience of Non-Govt./ Non-PSU clients, TDS certificate from clients to be enclosed)	Scanned Copy uploaded. **YES/NO**
ix)	Tenderer should deploy sufficient plant and machinery as per the requirement of work in consultation with the Engineer-in-	Format given as Annexure III in Tender document.	Scanned Copy uploaded. **YES/NO**

	charge (EIC) to achieve the milestones/ targets and overall completion within the time period.		
x)	Companies other than proprietary firm shall submit, scanned copy of Authorization Letter / Power of Attorney along with copy of Certificate of Incorporation of the Company under Companies Act showing CIN/LLPIN/ Name of Directors of the Company Resolution regarding Authority to assign Power of Attorney.	Scanned copy of Authorization Letter/ Power of Attorney Proprietary firm shall submit scanned copy of Authorization Letter / Power of Attorney only if the tender is processed by a person other than proprietor.	Scanned copies uploaded **YES/NO**
xi)	Scanned copy of EPF & ESIC registration certificate (in case of EPF & ESI registration certificate are not available with the bidder while submitting the tender, the bidder shall submit the undertaking letter	Format given as Annexure X in Tender document. (if applicable)	Scanned Copy uploaded. **YES/NO**
xii)	Undertaking for GST	Format given as Annexure VI in Tender document.	Scanned Copy uploaded. **YES/NO**
xiii)	Bidder shall submit scanned copy of valid registration under appropriate class with the Government of Maharashtra or other State Governments / Government of India or State / Central Government Undertaking.	Scanned copy to be uploaded	Scanned Copy uploaded. **YES/NO**
xiv)	Checklist/PQ Performa duly filled	Scanned copy	Scanned copies uploaded **YES/NO**

4.	**ENVELOPE –II (PRICE BID FOLDER):** It shall contain	
a)	Price/Financial e- Bid	To be quoted online through CPP portal https://etender.gov.in/eprocure/app.
b)	Details of any other information	Attached: Yes / No

Note: The works mentioned / claimed by bidder in PQ Performa shall only be considered for pre-qualification. Certificates of other irrelevant works are not to be attached.

DECLARATION

I, (_____) hereby declare that the documents uploaded/submitted / enclosed are true and correct. In case any document at any stage found fake / incorrect, my EMD may be forfeited & action as deemed fit by MMRCL can be taken against me.

Place:
Date:

Signature with stamp
Authorized Signatory of the Agency

FORM "A"

DETAILS OF SIMILAR WORKS COMPLETED DURING THE LAST FIVE YEARS ENDING LAST DAY OF MONTH PREVIOUS TO THE ONE IN WHICH TENDERS ARE INVITED.

Sl. No.	Name of work/ project and Location	Name and Address of client	Awarded Cost of work (in Rs. Lakhs)	Date of commence -ment as per contract	Stipulated date of completion	Actual date of completion	Whether the work was done on back-to-back basis Yes/No
1	2	3	4	5	6	7	8

SIGNATURE(S) OF BIDDER (S) (WITH STAMP)

Note: The contract or should give list of only of eligible category works of requisite amount with supporting documents issued from client.

FORM-B
FINANCIAL INFORMATION

1. Financial Analysis –Details to be furnished profit and loss account for the last three years duly certified by the Chartered Accountant as submitted by the applicant to the Income-Tax Department

Fig in lakhs Rs.

Sl. No.	Particulars	Financial Year (Last Three years)		
		2022-23	2021-22	2020-2021
1.	Gross Annual Turnover			
2.	Turn-Over on Construction Works			
3.	Profit/loss after Taxes (consolidated)			
4.	Profit/loss after Taxes (standalone)			

The bidder should give information strictly in above format.

Unique Document Identification Number (UDIN)……..

Signature of Chartered Accountant with Seal

SIGNATURE(S) OF BIDDER (S)

Form 'C'

FORM FOR CERTIFICATE OF NET WORTH FROM CHARTERED ACCOUNTANT

This is to certify that as per audited balance sheet and profit & loss account during the financial year....., the Net Worth of M/S.…… …….. (Name &registered address of Individual/Firm/Company), as on…… (the relevant date) is Rs…… after considering all liabilities. It is further certified that Net Worth of the company has not eroded by more than 28% in last three years ending on…….....

Unique Document Identification Number (UDIN)……..

Signature of Chartered Accountant
…….

Name of Chartered Accountant
…….

Membership of ICAI

Date and Seal

FORM – 'D'

FINANCIAL INFORMATION: Solvency

BANKERS' CERTIFICATE FROM A SCHEDULED BANK

This is to certify that to the best of our knowledge and information that M/s./Sh_____having marginally noted address, as a Customer of our bank are/is respectable and can be treated as good for any engagement upto a limit of ₹ _____(Rupees_____.)

This certificate is issued without any guarantee or responsibility on the bank or any of the officers.

(Signature) For the Bank

NOTE

1. Bankers Certificates should be on letter head of the Bank, addressed to tendering authority.
2. In case of Partnership firm, certificate should include names of all partners as recorded with the Bank.

Annexure-I

TENDER ACCEPTANCELETTER

(To be given on Contractor's Letter Head)

Date:

To,

Dy. Gen. Manager (Civil)
MMRCL,Mumbai

Sub: Acceptance of Terms & Conditions of Tender.

Tender ID: 2024_MMRCL_....._4

Name of Work: - Implementation of Multi Modal Integration Facilities at Six Underground Metro Stations viz. BKC, Bandra Colony, Santacruz, CSIA T1, Sahar & CSIA T2 of Mumbai Metro Line-3 project

Dear Sir

1) I/We have downloaded/obtained the tender document(s) for the above mentioned 'Tender/Work' from CPP Portal website(s) namely: https://etenders.gov.in/eprocure/app as per your advertisement, given in the above mentioned website(s).

2) I/We hereby certify that I/we have respected the site and read the entire terms and conditions of the tender documents, corrigendum(s) and reply to query if any made available tome/us which shall form part of the contract agreement and I/we shall abide hereby by the terms /conditions /clauses contained therein.

3) I/We hereby unconditionally accept the tender conditions of MMRCL's tender documents in its totality/ entirety for above mentioned work.

4) I/We declare that I/We have not paid and will not pay any bribe to any officer of MMRCL for awarding this contract at any stage during its execution or at the time of payment of bills, and further if any officer of MMRCL asks for bribe/gratification, I will immediately report it to the Appropriate Authority in MMRCL'.

5) I/We hereby submitted that I/We paid/submitted the required earnest money as per NIT conditions.

6) I/We certify that all information / documents furnished by our Firm is true & correct and in the event at any stage, the information/ documents is found to be incorrect/untrue or found violated, then we shall be liable for debarment from tendering in MMRCL without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.

Yours Faithfully,

(Signature of the Bidder, with Official Seal)

Annexure-II

UNDERTAKING REGARDING DEBARMENT/ BLACKLISTING

(To be given on Contractor's Letter Head)

Tender ID: 2024_MMRCL_....._4

Name of Work: - Implementation of Multi Modal Integration Facilities at Six Underground Metro Stations viz. BKC, Bandra Colony, Santacruz, CSIA T1, Sahar & CSIA T2 of Mumbai Metro Line-3 project

I/We ……. (name and post of authorized signatory) on behalf of…….(Name of firm) do hereby solemnly affirm and declare as follows:

(i) Our firm is not restrained/ debarred/ blacklisted by MMRCL or Central/State Govt. Depts./PSUs/World Bank/ADB etc. and the debarment is not in force as on last date of submission of proposal.

(ii) None of Proprietor /Partners /Board Members/ Directors of M/s…… (Name of firm) has remained Proprietor/Partner/Board Member/Director in any firm which stands debarred/ blacklisted by MMRCL or Central/State Govt. Depts./PSUs/World Bank/ADB etc. and the debarment is not in force as on last date of submission of proposal.

(iii) Our firm understands that at any stage, if above statements are found to be false, our firm shall be liable for debarment from bidding in MMRCL, apart from any other appropriate contractual legal action including debarment/blacklisting, termination of the contract etc. as deemed fit.

Date: [Signature and name of the authorized signatory of the firm]

Place:

Annexure-III

UNDERTAKING PLANT AND MACHINERY

(To be given on Contractor's Letter Head)

I/we deploy sufficient plant and machinery as per the requirement of work in consultation with the Engineer-in-charge (E-I-C) to achieve the milestones / targets and overall completion within the time period.

Place :

Date :

[Signature and name of the Authorized signatory of the firm]

Annexure-IV

DETAILS OF MACHINERY

NOTE: INFORMATION ABOUT MACHINERY OWNED BY CONTRACTOR AND OTHER MACHINERY SHALL BE SHOWN SEPARATELY. PLANNED MOBILIZATION OF MACHINERY ON AWARD OF CONTRACT SHALL BE GIVEN IN REMARKS.

Sr.	Name of Equipment	No. of Units	Kind of make	Capacity	Age and condition	Present location	Remarks

Annexure-V

LIST OF KEY PERSONNEL OF THE BIDDER TO BE APPOINTED ON THIS WORK

Sr.	Name of Person	Designation/ Post Held/Status	Academic Qualifications and Experience	Experience in similar nature of work	Remarks (any other points)

Annexure-VI

Undertaking for Registered under GST and compliant of GST provision.

(To be submitted by bidders in Envelope-I on their letter head)

I/We _____ (Name of company/ Firm) hereby undertakes that we are registered under GST and complying the GST provision. In case of noncompliance of GST provisions and blockage of any input credit, we (the bidder) shall be held responsible for indemnifying MMRCL. I/We also undertake that the Input Tax Credit (ITC) related to the Invoices raised by us for this work has been passed on to MMRCL. In case of non-compliance of GST provisions and blockage of any Input Tax Credit, we will be held responsible for indemnifying MMRCL.

Date:_____

Name & Signature of Contractor / Firm
(With official rubber stamp)

Annexure-VII

(To be submitted before award of work by L-1)

AFFIDAVIT

(To be executed in Rs.100 Non-Judicial stamp paper dully Notarized)

I, (_____) proprietor of M/s_____having address _____do hereby solemnly affirm and state as follows;

I am competent to swear this affidavit on behalf of _____ (name of the Agency) and hereby confirm that I am fully complying legal obligations with regards to payment of minimum wages as per to Minimum Wages Act, 1948 and deduction of Provident fund as per EPF and MP Act 1952 and Contract Labor (Regulation and Abolition) Act, 1970.

Date:_____

Name & Signature of Contractor / Firm
(With official rubber stamp)

(Notary)

Annexure-VIII

(To be submitted by L-1 bidder before award of work on his letter)

Undertaking

I/We _____ (Name of company/ Firm)_____ hereby undertakes that in case the Registration Certificate No. _____ dated _____ issued by _____ and Experience Certificate No. _____ dated _____ issued by _____(Name of Department)_____ submitted by me / us, is found to be forged / false at any stage, I / We may be debarred from MMRCL for taking participation in all future MMRCL works & any other suitable action may be taken against our company / firm as deemed fit by MMRCL.

Date:_____

Signature of Director / Proprietor of the Company / Firm

Name of Signatory _____

Postal Address of registered office/ company / firm____

_____

__

E-mail Address_____

Phone No._____

Annexure-IX

PROFORMA FOR EARNEST MONEY DECLARATION

(To be submitted on contractor's letter head)

Whereas, I/We, (Name of Agency),……..have submitted bid for the……
…….(name of work).".

I/We, hereby submit following declaration in lieu of submitting Earnest Money Deposit

(1) If, after the opening of tender, I/We withdraw of modify my/our bid during the period of validity of tender (including extended validity of tender) specified in the tender document,

Or

(2) If after the award of work, I/We fail to sign the contract, or to submit performance guarantee before the deadline defined in the tender document,

I/We shall be suspended for one year and shall not be eligible to bid for MMRCL tenders from date of issue of suspension order.

Signature of the contractor(s)

Annexure-X

UNDERTAKING

(For the agencies who do not have EPF/ESIC Registration)
(TO BE UPLOADED IN ENVELOPE – I)
(To be submitted company's letter head)

I/We (……..……) hereby undertake that I/We shall produce the EPF & ESIC registration number after award of work and I/We shall continue these valid EPF & ESIC registration number till the actual completion of the contract failing which, I/We permit MMRCL that at the time of making any payment to me/us for work done under the contract to deduct/withhold an amount as per terms & conditions of contract.

Place :

Date :

Signature of the contractor /
Authorized Signatory with rubber stamp

Annexure-XI

CONTRACT AGREEMENT

MUMBAI METRO RAIL CORPORATION LTD (MMRC)

Name of Work: **Implementation of Multi Modal Integration Facilities at Six Underground Metro Stations viz. BKC, Bandra Colony, Santacruz, CSIA T1, Sahar & CSIA T2 of Mumbai Metro Line-3 project**

THESE ARTICLES OF AGREEMENT made at Mumbai this……..day of ……..... Two Thousand twenty four between the Mumbai Metro Rail Corporation Ltd (MMRC) constituted and established and having its principal office in MMRCL office Building, Transit office, A wing t, "E" Block of BKC Bandra (East), Mumbai – 400 051 hereinafter called "the Employer" (which expression shall unless the context does not admit, include its successor or successors and assign or assigns) of the one part and Shri……..., Indian inhabitant and being Proprietor of the partnership firm carrying on business of Employer Civil Contractors in the name and style of M/s. …….and having their office at ……hereinafter called collectively "the Contractor" (which expression shall unless the context does not admit, included their respective heirs, administrators, executors and surviving partner or partners) of the other part.

WHEREAS the Employer invited by its public advertisement No. ……published in the ……dated……..public tenders for the execution of works referred to there in and more particularly described in the tender documents constituted in the Tender Notice, Tender Guidelines to the Bidders, General Requirements of Contract, Conditions of Contract, Specifications, Schedule of Quantities, Reference Documents and other allied documents.

AND WHEREAS the Contractor submitted his tender dated …….for a sum of Rs. ……. the estimated cost.

AND WHEREAS the parties hereto are desirous of recording the Agreement so concluded between them which they do hereinafter.

NOW THIS AGREEMENT WITNESSES AS FOLLOWS:

1. In this Agreement, words and expressions shall have the same meaning as are respectively assigned to them in the Conditions of the Contract hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed as a part of this Agreement, and the priority of the documents shall be as follows:
   (i) The Contract Agreement
   (ii) Letter of Acceptance
   (iii) Addendums to the Bid documents
   (iv) Special Conditions of Contract
   (v) Conditions of Contract, Addition General Conditions and Specifications, General Conditions
   (vi) Tender Notice and Scope of Works
   (vii) Construction Specifications
   (viii) Tender Drawings

(ix) Contractor's Tender Documents
(x) Reference documents

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the works and remedy and defects therein conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the works and the remedying of defects therein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed the day and year first before written:

SIGNED AND DELIVERED FOR AND ON)
BEHALF OF MUMBAI METRO RAIL CORPORATION LTD)

Name: Signature:
Designation:

In the presence of:

(1) Name: Designation: Signature:

(2) Name: Designation: Signature:

SIGNED AND DELIVERED FOR AND ON)
BEHALF OF THE CONTRACTOR)

Shri ……)
pursuant to Authority of their)
Deed of Partnership)
Signature:

In the presence of:

(1) Name: Designation: Signature:

(2) Name: Designation: Signature:

Annexure-XII

DECLARATION BY CONTRACTOR (S)

I / We hereby declare that I / We have made myself / Ourselves thoroughly conversant with the local conditions regarding all materials and labour on which I / We have based my / Our rates for this tender. The specifications and lead on this work have been carefully studied and understood by me / us before submitting the tender. I / We undertake to use only the best materials and method proposed to employ duly approved by the Employer, during execution of the work and to abide by the decision.

Signature of Contractor with Stamp

Annexure-XIII

Format 1: Contract Form

The MD, MMRCL, through
DGM (Civil)
MMRCL
MUMBAI-400051

Contract No……..…… dated…….

To

Contractor Name - ……

[Complete address of the contractor] - ……

Subject of Work/ Services: .....

Ref:

1. *This office' Letter of Award No……..….. dated ……...*
2. *This office* Tender Document No. **MMRCL/……;** Tender Title: _____, *dated…….. and subsequent Amendment No……., dated… (If any). (Hereinafter referred to as 'the Tender Document')*
3. *Your Tender No…… dated…….. and subsequent communication(s)/ Revised Offer No dated…….. (If any), exchanged between you and this office in connection with this tender. (Hereinafterreferred to as 'Your Offer')*

Dear Sir/ Madam,

1) Your bid referred above, read with subsequent letters mentioned above, for the Services stipulated in the Schedules annexed herewith, have been accepted. Terms and conditions in this Contract and the documents listed in the clause below shall apply.

2) Terms and conditions in the documents mentioned under Reference no: 1, 2 and 3 above (including General and Special Conditions of Contract) shall also be part of this contract.

(Signature, name and address of * Contractor Entity's authorized, official*)

For and on behalf of…….

Received and accepted this Contract ……..

(Signature, name, and address of the contractor's executive duly authorized to sign on behalf of the contractor)

For and on behalf of …… (Name and address of the contractor)……

(Seal of the contractor) Place_____Date:…… …..

Firm to submit details after placement of the Contract/signing the Agreement.

Tender Document No. **MMRCL/……;** Tender Title: **……**

I: Personnel Deployment Plan

Procuring Entity Procuring Organisation

[Complete address of the Procuring Entity]

Contract No_____; Date_____

Contractor's Name_____

[Address and Contact Details]

[List all Personnel and Subcontractors to be deployed in the delivery of the Services, with position, job description and minimum qualifications as per the Schedule of Requirements/ bid]

II: Equipment Deployment Plan

Procuring Entity Procuring Organisation

[Complete address of the Procuring Entity]

Contract No_____; Date_____

Contractor's Name_____

[Address and Contact Details]

[List all Equipment to be deployed in the delivery of the Services, as per the Schedule of Requirements/bid]

III: Materials Deployment Plan

Procuring Entity Procuring Organisation

[Complete address of the Procuring Entity]

Contract No_____; Date_____

Contractor's Name_____

[Address and Contact Details]

[List all Materials to be deployed in the delivery of the Services, as per the Schedule of Requirements/bid]

Date…….

Format 2: No Claim Certificate

(On company Letter-head)

Contractor's Name_____

[Address and Contact Details]

Contractor's Reference No._____

To

The MD

MMRCL
MUMBAI-400051

No Claim Certificate

Sub: Contract/Tender Tender Document No. **MMRCL/……;** Tender Title: **……**

We have received the sum of ₹ (Rupees_____only) as finalsettlement due to us for the work / services_____under the abovementioned contract agreement.

We have received all the amounts payable to us with this payment and have no outstanding dispute of any description whatsoever regarding the amounts worked out as payable to us and received by us.

We hereby unconditionally and without any reservation whatsoever, certify that we shall have no further claim whatsoever, of any description, on any account, against the Procuring Entity, under contract above. We shall continue to be bound by the terms and conditions of the contractagreement regarding its performance.

Yours faithfully,

Signatures of contractor or Person authorised to sign the contract documents.on behalf of the contractor

(company Seal)

Date:_____

Place:

INSTRUCTIONS FOR ONLINE BID SUBMISSION

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at: http://etenders.gov.in/eprocure/app .

REGISTRATION

1) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: http://etenders.gov.in/eprocure/app) by clicking on the link "**Online bidder Enrolment**" on the CPP Portal which is free of charge.

2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.

3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.

4) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudra etc.), with their profile.

5) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.

6) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.

SEARCHING FOR TENDER DOCUMENTS

1) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.

2) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.

3) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

1) Bidder should take into account any corrigendum published on the tender document before submitting their bids.

2) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF / JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.

4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" or ''Other Important Documents'' area available to them to upload such documents and keep it as a repository.

Note: My Documents space is only a repository given to the Bidders to ease the uploading process. If Bidder has uploaded his Documents in My Documents space, this does not automatically ensure these Documents being part of Technical Bid.

SUBMISSION OF BIDS

1) Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.

2) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.

3) Bidder has to select the payment option as "offline" to pay the tender fee / EMD as applicable and enter details of the instrument.

4) Bidder should prepare the EMD as per the instructions specified in the tender document. The original should be posted/couriered/given in person to the concerned official, latest by the last date of bid submission or as specified in the tender documents. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.

5) Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BoQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BoQ file, open it and complete the white coloured (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the

bidder should save it and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.

6) The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

7) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid opener's public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.

8) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.

9) Upon the successful and timely submission of bids (i.e. after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.

10) The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

ASSISTANCE TO BIDDERS

1) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

2) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk.

SCOPE OF WORK

2.1 General

2.1.1 Mumbai Metro Rail Corporation Limited (MMRC) seeks the services of Contractor for " Implementation of Multi Modal Integration Facilities at Six Underground Metro Stations viz. BKC, Bandra Colony, Santacruz, CSIA T1, Sahar & CSIA T2.

2.2 Scope of Assignment

The scope mainly comprise of development/ extension/ improvement/ widening of footpaths in the designated station influence area including Road reinstatement works (wherever required), providing dedicated drop-off/ pick-up bays for buses, feeders, auto/ taxies, private vehicles (wherever indicated in Drawing or instructed by the Employer) etc. geometric improvement of junctions, providing property entry/ exits, providing hand rails, lane marking, cat-eyes etc. and providing traffic management measures along with junction improvement such as central medians, signals and signage (cautionary & Informatory), tree guards, reinstatement of street furniture (like dust bins, benches, bus stop, kiosks, bollards etc.) landscaping, street lights (relocation) etc. within the Metro Station influence area. The Contractor shall have to coordinate with utility agencies and other stake holders for shifting of their junction/ pillar boxes and for improvement of junction. The work content in this Contract consists of supplying all labour, materials, tools, plant, and necessary machinery as required to completely execute the works and finishing of the structures as per the approved Drawing, instruction of the Employer and as stated in the Schedule of Payments. The said scope will be applicable for Implementation of Multi Modal Integration Facilities at Six Underground Metro Stations viz. BKC, Bandra Colony, Santacruz, CSIA T1, Sahar & CSIA T2.

2.3 The scope of works shall also include but is not limited to the following:

1. Civil works for installation, site specific help regarding machinery for unloading, internal shifting is included in contract scope.
2. Preparing necessary documents for getting the statutory approvals from the various concerned authorities.
3. Preparing working drawings, modifications, alterations, changes, etc. that may be required to be carried out as directed.
4. True and proper setting out and layout of the Works by total station, benchmarks and provision of all necessary labour, instruments and appliances in connection therewith as specified or as directed.
5. Development of temporary working yard, setting-up equipment and plants and establishment of site office with power supply points & air-condition.

6 Provision of barricading as required for the individual work areas and the areas occupied by the Contractor to segregate them from the interface contractor area.

7 Surplus soil/material/building debris shall be collected and transported for disposal in specified area or at any other land fill sites approved by relevant authorities including compaction to the desired levels.

8 All aspects of quality assurance, including testing of materials and other components of the work, as specified or as directed.

9 Adequate arrangements shall be made by the Contractor to complete the work in stipulated time period of 2 months.

10 Submission of 'As-Built' drawings and other related documents (Both hard copy and soft copy).

11 Maintenance of the completed Work during the Defect Liability Period as specified.

12 Any other co-ordination, permission from all the Authorities and local people and submission of work completion certificate.

13 Any other item of work as may be required to be carried out for completing the work under this Contract in all respects fit-for-use in accordance with the provisions of the Contract and/or to ensure the structural stability and Employer/Engineer during and after construction.

2.4 Associated works

Works to be performed shall also include all general works preparatory to the Works at Station influence areas. If any damage to finishes during execution occurred, then it is to be rectified by the contractor. If the works of any kind necessary for the due and satisfactory construction, completion and maintenance of the Works to the intent and meaning of the drawings adopted and construction specifications, to the best Engineering standards and instructions that may be issued by the Employer/Engineer from time to time, compliance by the Contractor with all Conditions of Contract, supply of all materials, apparatus, plants, equipment, tools, fuel, water, strutting, timbering, transport, offices, stores, workshop, staff, labour and the provision of proper and sufficient protective works, diversion, temporary fencing, lighting and watching required for the safety of the public or interfacing contractor and protection of works on adjoining land; first-aid equipment, sanitary accommodation for the staff and workmen, effecting and maintenance of all insurances, the payment of all wages, salaries, provident fund, fees, royalties, duties or the other charges arising out of the erection of works and the regular clearance of rubbish, clearing up, leaving the site perfect and tidy on completion.

2.5 Role of Employer

The Employer will assist the Contractor in getting water supply, sewer connection and power connection by way of issuing the letters of request to the concerned authorities. The Employer, if required may engage a Supervision Consultant for day to day execution supervision of the project on its behalf.

2.6 Construction Plan

The construction shall be planned in such a manner that they do not obstruct or interfere with the existing Access to any Metro Station, public or private property and other utilities. Where work is required to be carried out at locations suitable safety and protection arrangements will have to be ensured, for which nothing extra will be payable. The Contractor shall ensure that no damage is caused to any such element and Employer shall be indemnified against such damage.

No claims whatsoever on account of any discrepancy between the sub-surface conditions that may be actually encountered at the time of execution of work and those given in these documents shall be admissible under any circumstances whatsoever.

2.7 Levels and ground strata

Wherever Indian Standards do not cover some particular aspects of construction, relevant British/German Standards will be referred to. The Contractor shall make available at site such standard codes of practice.

The levels, measurements and other information concerning the existing site as shown on the Tender drawings are believed to be correct, but the Contractor shall verify them for himself and also examine the nature of the ground as no claim or allowance whatsoever will be entertained on account of any errors or omissions in the levels or strata turning out different from what is shown on the Drawings.

2.8 Construction site

The land needed temporarily for site setup for material testing shall be developed by the Contractor at his own cost.

2. 9 Cost of work

The rates shall be inclusive of all costs but not limited to the cost such as for Equipment, tools, all type of labour, supervision, all materials from the source of supplies as approved by the Employer including lifts, transport, all temporary works, erection maintenance, Contractor's profits & establishment/overheads together with preparation of working Drawings designs (wherever required) and As-built drawings, all general risks, taxes, royalties, duties, labour, insurance liabilities and all other obligations set out or implied in the Contract for completion of work except otherwise specified in the Bill of Quantities.

2.10 Interfaces

The Contractor shall co-ordinate with the Package JV contractor and work simultaneously without any hindrance to the parties involved.

The said contractors will erect their own site hoarding within the Site. The Contractor shall allow access to all other contractors and do the necessary coordination

AWARD OF CONTRACT

1. Award Criteria

The Employer will award the Contract to the Bidder whose Bid has been determined.

i) To be substantially responsive to the Bidding documents and who has offered the lowest evaluated Bid Price; and
ii) To be within the available bid capacity adjusted to account for his bid price which is evaluated to be lowest.

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

2. Employer's Right to accept any Bid and to reject any or all Bids :

Notwithstanding Clause 2, the Employer reserves the right to accept or reject any Bid, and to cancel the Bidding process and reject all Bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

3. Notification of Award and Signing of Agreement:

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

The notification of award will constitute the formation of the Contract, subject only to the furnishing of a performance security in accordance with the provisions of Clause 4.

The Agreement will incorporate all necessary documents of GCC between the Employer and the successful Bidder. It will be signed by the Employer and sent to the successful Bidder, within 14 days following the notification of award along with the Letter of Acceptance. Within 7 days of receipt, the successful Bidder will sign the Agreement and deliver it to the Employer.

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

The Successful Bidder shall prepare one plus three copies of the agreement documents duly spiral bound after issue of letter of acceptance comprising the bid as described in NIT.

4. **Performance Security:**

Within 14 days of receipt of the Letter of Acceptance, the successful Bidder shall deliver to the Employer a Performance Security in any of the forms given below for an amount equivalent to 5% of the Contract price.

If the performance security is provided by the successful Bidder in the form of a Bank Guarantee, it shall be issued by a Scheduled Commercial bank.

Failure of the successful Bidder to comply with the Clause shall constitute sufficient grounds for cancellation of the award and forfeiture of the Earnest Money Deposit.

5. **Advance Payment and Security:**

The Employer will provide Mobilization Advance Payment of 10% on the Contract Price with interest rate of last 4 months SBI MCLR +0.5% to be applied quarterly against an Advance Bank Guarantee of equivalent value as stipulated in the General Conditions of Contract, subject to maximum amount, as stated in the SCHEDULE 'F'.

6. **Dispute Review Authority:**

In case of arising of any dispute with the Contractor pertaining to assigned scope of work, during the project tenure, the final authority for such dispute resolution shall be with MD MMRCL and as per provision of General Conditions of Contract.

7. **Corrupt or Fraudulent Practices:**

The Employer will reject a proposal for award if it determines that the Bidder recommended forward has engaged in corrupt or fraudulent practices in competing for the contract in question and will declare the firm ineligible.

Furthermore, Bidders shall be aware of the provisions stated in Clause of the General Conditions of Contract.

A. GENERAL

1. **Dispute**

   If the Contractor believes that a decision taken by the Engineer-in-charge was either outside the authority given by the Contract or that the decision was wrongly taken, the decision shall be referred to the MD, MMRCL within 14 working days of the notification of the Employer's decision.

   In the event of any dispute or claim arising out of or relating in any manner to the decision taken by the Engineer-in-charge either outside the scope or authority given under this Contract, the Contractor shall attempt, in good faith, to amicably resolve the Dispute. The Contractor may refer such dispute to the Director (Planning & Real Estate Dev./NFBR), MMRCL, within 14 days from the date of notification of the Engineer-in-charge's decision. The Director (Planning & Real Estate Dev./NFBR) shall be at the first level in the dispute resolution mechanism for amicable settlement of dispute.

   Such a dispute is not resolved if the Contractor/ Engineer-in-charge is not satisfied with the dispute resolution mechanism, the Aggrieved Party may appeal before the Managing Director (MD), MMRCL who shall be the second level in dispute resolution mechanism and shall endeavor for amicable settlement of dispute.

2. **Procedure of Dispute Resolution**

   The Arbitration shall be conducted in accordance with the Arbitration procedure stated in the Special Conditions of the Contract.

   Dispute Resolution Process:

   a. If the Contractor is dissatisfied and is unable to come to a settlement agreement under Clause 1, then the Parties may resort to arbitral proceedings.
   b. The sole arbitrator shall be appointed by mutual consent of both the parties within 28 days from the date of first written intimation of the intent to resolve the dispute by arbitration.
   c. The seat of arbitration shall be Mumbai and the language of arbitration shall be English.
   d. The decision of the arbitrator shall be final and binding upon the Parties.
   e. Both the parties shall bear the cost of the arbitration in equal proportion unless otherwise decided by the sole arbitrator.
   f. The parties agree that the existence and content of the arbitration and the terms of the order or award made in the arbitration shall, except as may be required by law, be kept confidential.
   g. If the Parties to this Contract are not satisfied with the arbitral award, the Party may approach the relevant courts of law. The Courts at Mumbai shall have exclusive jurisdiction to hear all disputes arising under, pursuant to and/ or in connection with the Contract.
   h. Performance under the contract shall continue during the arbitration proceeding and payments due to the Contractor shall not be withheld unless that is subject matter of the arbitration proceedings.

B. TIME CONTROL

1. Programme :

Within the time stated in the Contract, the Contractor shall submit to the Employer for approval a Programme showing the general methods, arrangements, order, and timing for all the activities in the Works along with monthly cash flow .

An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work including any changes to the sequence of the activities.

The Contractor shall submit the Employer, for approval, an updated Programme at intervals no longer than the period stated in the Contract. If the Contractor does not submit an updated Programme within this period, the Employer may withhold the amount stated in the Contract 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.

The Employer's approval of the Programme shall not alter the Contractor's obligations. The Contractor may revise the Programme and submit it to the Employer again at any time.

A revised Programme is to show the effect of Variations and Compensation Events.

2. Supply of Progress Photographs And Albums:

The work covers the supply of color photographs and albums to serve as a permanent record of various stages/ facets of work needed for an authentic documentation as approved by the Employer. The photographs shall be of acceptable quality and they shall be taken by a professionally competent photographer with camera having the facility to record the date of the photographs taken in the prints and the negative. Each photograph in the album shall be suitably captioned and dated. The photographs and materials including of copy shall format part of their records for the Employer and prints of the same cannot be supplied to anybody else or published without the written permission of the Employer.

3. Delays Ordered by the Employer :

The Employer may instruct the Contractor to delay the start or progress of any activity within the Works after approval from Employer.

4. Management Meetings :

Either the Employer or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in

accordance with the early warning procedure.

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

5. Early Warning :

The Contractor is to warn the Employer at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price or delay the execution of works. The Employer may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate is to be provided by the Contractor as soon as reasonably possible.

The Contractor shall cooperate with the Employer in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Employer.

C. QUALITY CONTROL

1. **Identifying Defects :**

   The Employer 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 Employer may instruct the Contractor to search for a Defect and to uncover and test any work that the Employer considers may have a Defect.

2. **Correction of Defects :**

   The Employer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract.

   The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

   Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Employer's notice.

3. **Uncorrected Defects:**

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

D. COST CONTROL

1. Variation :

During execution of the Contract, the Employer/ Engineer, at any time before Taking over, may instruct to execute any work not included in the Schedule of Rates (BOQ/ SOR) but necessary for completion of the work as per it's intended purpose. The Contractor shall be bound to execute such variation works. However, the Contractor may give notice to the Employer/ Engineer, if as per his opinion, such variation may affect safety of the Works or his workers or property in vicinity of the Work site or to public in general, or such varied work may affect the warranty by any means. Upon receiving such notice the Employer/ Engineer may change his instruction.

All variations after certification shall be included in updated program prepared by the Contractor after approval of the Employer.

2. Payment for Variations (Extra Item) :

In case the Employer/ Engineer instructs the Contractor to execute any work for which no rate is entered in the Schedule, the Contractor shall provide the Employer with a quotation (with breakdown of unit rates) for carrying out the variation when requested to do so by the Employer which shall be given within seven days of the request or within any longer period stated by the Employer and before the Variation is ordered. The Employer shall assess the quotation with respect to the rates in MCGM SOR, the lowest among the two shall be adopted for payment of the Extra Item.

If the work in the Variations corresponds with an item description in the Bill of Quantities and if, in the opinion of Employer, quantity of work above the limit stated or the timing of its execution do not cause the cost per unit quantity to change, the rate in the Bill of quantities shall be used to calculate the value of the variation. If the cost per unit of quantity changes, or if the nature or timing of work in the variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.

If the Contractor's quotation is unreasonable and the Item is not available in the MCGM SOR, the Employer may order the Variation and make change to Contract Price which shall be based on Employer's own forecast of the effects of the Variations on Contractor's Cost.

If the Employer decides that the Urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the variation shall be treated as a compensation Event.

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

3. Change in quantities :

Quantities entered in the Price Schedules are indicative only and may vary up to any extent. Payment of Scheduled Items shall be done according to the actually executed and measured quantity multiplied by the quoted rate (subjected to the % above or below quoted).
If the final quantity of the work done differs from the quantity in the bill of quantities for the particular item by more than 25 percent (+/-), provided the change exceeds 15% of initial Contract price, the Employer shall adjust the rate to allow for the change to the Contractor, if ordered in writing by the Employer so to do, also carry out any quantities in excess of the limit hereof on the same conditions as and in accordance with the specifications in the tender and at the rates –

(i) at the rates prevailing in the market, the said rates increased or decreased as the case may be, by the percentage which the total tendered amount bears to the estimated cost of the work put to tender based upon the schedule of rates applicable to the year in which the tenders were invited.

Employer shall not adjust rates from changes in the quantities if thereby the total initial contract price does not change by more than 15%, except with the prior approval of the Competent Authority.

If requested by the Employer, the Contractor shall provide Engineer with a detailed cost breakdown of any rate in Bill of Quantities/Quoted Percentage (%).

4. Bi-Weekly Progress Report:

The Contractor shall submit to the Employer two copies of a Bi-weekly Progress Report (BPR), in a form and contents acceptable to the Employer, describing the progress and current status of the Works. The BPR shall address the matters set out in the Works Programme.

The BPR shall be submitted by the end of every 15 days. It shall account for all works actually performed. The processing of the Interim Payment Certificate will only commence after the receipt of the BPR on the due date. Late receipt will delay the processing of the IPC.

The BPR shall be divided into two sections. The first section shall cover progress and current status relating to design in the initial stage and then the second section shall cover progress and current status relating to construction. Also future works undertaken/to be undertaken shall be the part of BPR.

The BPR shall be signed by the Project Manager, who by signing the BPR shall certify that all information contained in the BPR, as relating to their section of the Works, has been accepted and verified by each signatory as being accurate, honest, true and meets the requirements of the Contract.

A Bi-weekly meeting to monitor the progress of the project shall be convened by the Employer/Engineer and the Contractor's Project Manager and his Engineers.

The Employer may also conduct progress review meetings on weekly/bi-weekly intervals depending upon the requirement or urgency of works. In these review meetings the Employer may call Contractor's Supplier/Sub-Contractor/Temporary Works Designer, etc. as per the requirements.

5. **Progress Photographs :**

The Contractor shall provide monthly progress photographs which have been properly recorded to show the progress of the works to the Employer. The photographs of not less than 10 numbers, shall be taken on location agreed with the Employer to record the exact progress of the Works. Two sets of photographs shall be provided on CD Rom format with two sets of colour prints of 175mmx125 mm size shall be digital and taken on locations agreed with the Employer to record the exact progress of the Works. All photographs shall be taken by photographer using a digital single-lens reflex camera of at least 12 megapixels,. Processing shall be carried out by a competent processing firm to the satisfaction of the Employer.

The Contractor shall ensure that no other photography is permitted on the Site without approval from the Employer. The Contractor should be aware of the local regulations and conditions with regard to Photography in some "RESTRICTED AREAS' in Mumbai.

6. **Payments:**

After preliminary scrutiny and certification by the Engineer-in-charge, payment of 80% of the certified interim amount shall be made by the Employer within 7 days. The amount certified shall account for all deductions, including statutory deductions, recoveries for advances and any payments due from the Contractor. The balance of 20% shall be paid within 14 days, from the date of preliminary certification by the Engineer/Employer. Next 80% interim payment shall be made only after 100% payment or proceeding interim payment certified has been completed. The contractor can also claim 100% payment provided all the documents are in order.

The Employer shall pay the amount certified in the Final payment certificate within 28 days from the date of issue of the certificate,

7. **Compensation Events:**

Compensation whenever applicable only extension may be considered on merits if not on part of Contractor.

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

8. **Tax**

All duties, taxes (excluding GST) and other levies payable by the Contractor under the contract shall be included in his offer. GST as applicable shall be paid separately. No separate reimbursement/recovery will be made by MMRCL due to any changes in taxes, duties, other levies paid by the Contractor.

The Contractor should submit GST registration related documents as applicable for Maharashtra State prior to claim any advances/payment

9. Currencies

All payments shall be made in Indian Rupees.

10. **Price adjustment.**

No Price Adjustment is applicable for this work.

11. **Retention Money:**

The Employer shall retain percentage (5%) as stated in contract from each certified payment from R.A. Bill towards retention money until Completion of the whole of the Works.

On virtual Completion of the whole of the Works, 50% total amount of 5% retained shall be paid to the Contractor, as per Engineer's certification stating that all the work is completed as per specification of contract document.

On completion of the whole works, the Contractor may substitute balance 50% retention money with an “on demand" Bank guarantee, if agreed so, by the Employer. The balance Retention Money shall be released within 28 days after completion of each DLPs provided that the Employer is satisfied that there is no demand outstanding against the Contractor. In the event of different Defects Liability Period have been specified or become applicable to different sections or parts of the Permanent Works, the said money will be released within 28 days on expiration of 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.

12. **Liquidated Damages:**

The Contractor shall pay liquidated damages to the Employer as stated in the Schedule “F”. The liquidated damages shall also be correlated with various milestones of works as stated in the contract & shall not exceed the total amount of liquidated damages. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities.

If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.

If the Contractor fails to comply with the time for completion as stipulated in the tender, then the Contractor shall pay to the employer the relevant sum stated in the Schedule ”F” as Liquidated damages for such default.

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

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

In the event if the Contractor delays the work based on a particular milestone for that activity, he is liable for reduction of proportionate amount of L.D. from his bill. However, in case the Contractor covers the time schedule & achieves Milestone for the subsequent activity in line with approved work schedule, then L.D. deducted from his previous bill (for not achieving earlier milestone) shall be released.

Uncorrected Defects and Deficiencies

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 (depending upon the type of defect) and the Contractor shall pay this amount, on correction of the Defect or deficiency by another agency.

13. **Advance payment :**

The Mobilization Advance shall be with interest rate of last 4 months SBI MCLR +0.5% to be applied quarterly and shall be paid up to 10% of the accepted Contract amount, and is payable in two equal instalments. The first instalment shall be paid after mobilization has started and second installment shall be paid after the Engineer-in-charge has confirmed satisfactory utilization (only after the contractor furnishes a proof of utilization) of the first advance. The mobilization Advance shall be paid within 28 days after receipt of an irrevocable Unconditional Bank Guarantee (BG) in a form and by a bank acceptable to the Employer in amounts and currencies equal to the 100% of mobilization advance payment. The BG Bonds shall be furnished initially valid for contract period. If the contract period gets extend due to any reasons, the BG Bond shall be kept renewed from time to time. The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be

progressively reduced by the amounts repaid by the Contractor.

The Employer shall make advance payment to the Contractor of the amounts stated in the Contract by the date stated in the Contract, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to the advance payment. The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the Contractor.

The Contractor is to use the 'Mobilization advance payment only to pay for Equipment, Plant and mobilization expenses required specifically for execution of the Works. The Contractor shall demonstrate that Mobilization advance payment has been used in this way by supplying copies of invoices or other documents to the Engineer.

The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, Compensation Events, or Liquidated Damages.

14. Secured Advance

No Secured advance will be paid for this work.

15. **Securities**

Performance Security

The amount of Performance Security shall be 5% of the accepted Contract Amount and additional security for unbalanced bids if any shall be provided to the Employer within 15 days of receipt of the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer and denominated in Indian Rupees. The Performance Security and additional security for unbalanced bids shall be valid until a date 21 days from the date of issue of the certificate of completion.

Additional Security Deposit: Additional Security Deposit to be paid by the selected bidder towards unreasonably low tender along with Security deposit shall be calculated as follows: -

i. If the quoted percentage is up to and inclusive of 10% below the cost put to tender, the bidder should submit the details about how he is going to complete the work with his quoted rate.

ii. If the tendered offer is anything more than 10% below compared to the cost put to tender the amount of additional Security Deposit, will be 1%, for each percentage (%) quoted below 10%.

iii. The sum of total amount as calculated towards Additional Security Deposit in the form of Demand draft/BG/FDR drawn in favor of MMRCL drawn on Commercial scheduled Bank valid throughout the contract

period.

iv. The selected Bidder shall submit Original Demand Draft/BG/FDR of ASD amount within 8 working days after issuance of LOA.

v. Earnest Money Deposit of Bidder failing to submit said Demand Draft/BG/FDR shall be forfeited and shall be disqualified for MMRCL bidding process for the period of one year from the date of submission of tender for MMRCL works.

In case, it is found that the documents, DD/ BG/ FDR submitted by the Bidder is false or misleading then his earnest money Deposit shall be forfeited. Also, additionally legal action may be initiated against the Bidder. The additional Security paid shall be exclusive of GST.

Refund of Additional Security Deposit

The additional security deposit shall be released within 28 days of issue of 'Certificate of Completion' with respect to the whole of the Works. In the event the Engineer issues a Taking over Certificate for a section or part of the Permanent Works, only such proposition thereof as the Engineer determines (having regard to the relative value of such section or part of the Works) shall be considered by the Engineer for payment to the Contractor.

Refund of Performance Security

The Deposit on account of performance security shall be released within 28 days of completion of Defects Liability Certificates 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.

16. 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 Liability periods shall be remedied by the Contractor at the Contractor's cost.

E. CLOSING OF THE CONTRACT

1. **Completion :**

   The Contractor shall request the Employer/ Engineer to issue a Certificate of Completion of the Works and the Employer/ Engineer will do so upon deciding that the Work is completed.

2. **Taking Over:**

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

3. **Final Account**

   The Contractor shall supply to the Employer/ Engineer a detailed account in triplicate of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Employer/Engineer shall issue a Defect Liability Certificate and certify any final payment that is due to the Contractor within 28 days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer shall issue within 28 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Employer/ Engineer shall decide on the amount payable to the Contractor and issue a payment certificate, within 28 days of receiving the Contractor's revised account.

4. **Operating and Maintenance Manuals:**

   "As built" Drawings, shall be supplied by the Contractor as per the dates stated in the Contract.

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

5. **Termination**

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

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

a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Programme and the stoppage has not been authorized by the Engineer.

b) the Employer/Engineer instructs the Contractor to delay the progress of the Works and the instruction is not withdrawn within 28 days;

c) the Employer or the Contractor goes bankrupt or goes into liquidation other than for a reconstruction or amalgamation;

d) a payment certified is not paid by the Employer to the Contractor within 56 days of the date of the certificate;

e) 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 Employer/Engineer;

f) the Contractor does not maintain a security which is required;

g) the Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the Schedule “F”; and

h) If the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

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

When either party to the Contract gives notice of a breach of contract to the Employer/Engineer for a cause other than those listed under Sub Clause 5.2 above, the Employer shall decide whether the breach is fundamental or not.

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

If the Contract is terminated the Contractor shall stop work immediately, make the Site safe and secure and leave the Site, Soon as reasonably possible.

6. **Payment upon Termination :**

If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a certificate for the value of the total work done till that date, less advance payments received up to the date of the issue of the certificate (Payment made till last running bill), less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract and also the difference between the amount payable to Contractor for the balance portion of work and contract amount finalized for completing the balance portion of work if any. If the total amount due to the Employer exceeds any payment due to the Contractor the difference shall be a debt payable to the

Employer.

If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Employer shall issue a certificate for the value of the work done, the cost of balance material brought by the Contractor and available at site, 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.

7. **Property :**

All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Employer, if the Contract is terminated because of a Contractor's default.

8. **Release from Performance :**

If the Contract is frustrated by the outbreak of war or epidemic declared under Epidemic Disease Act 1897 by any other event entirely outside the control of either the Employer or the Contractor, the Employer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

Percentage Rate Tender & Contract for Works

(A) Tender for the work of:-

.....
.....

.....
.....(i) To be uploaded by……. hours on …….. to/upload at
(ii) To be opened in presence of tenderers who may be present at …… hours on
in the office of .....

TENDER

I/We have read and examined the notice inviting tender, schedule, A, B, C, D, E & F Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, Special conditions, Schedule of Rate & other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I/We hereby tender for the execution of the work specified for the MMRC within the time specified in Schedule 'F' viz., schedule of quantities and in accordance in all respect with the specifications, designs, drawing and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of contract and with such materials as are provided for, by, and in respect of accordance with, such conditions so far as applicable.

I/We agree to keep the tender open for …..... days from the due date of its opening in case of single bid system ….....……. from the date of opening of technical bid in case tenders are invited on 2 /3 bid/ system for specialised work and not to make any modification in its terms and conditions.

I/We have deposited EMD for the prescribed amount online in the account of MMRC as per the bid document.

A copy of earnest money deposit receipt of prescribed amount deposited in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee (as prescribed) issued by a Commercial Bank, is scanned and uploaded (strike out as the case may be). If I/We, fail to furnish the prescribed performance performance guarantee within prescribed period, I/We agree that MMRC shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I/We fail to commence work as specified, I/ We agree that MMRC shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said performance guarantee absolutely. The said Performance Guarantee shall be a guarantee to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 12.2 and 12.3 of the tender form.

Further, I/We agree that in case of forfeiture of Earnest Money or Performance Guarantee as aforesaid, I/We shall be debarred for participation in the re-tendering process of the work.

I/We undertake and confirm that eligible similar work(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/We shall be debarred for tendering in MMRC in future forever. Also, if such a violation comes to the notice of any Department of MMRC before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

I/We hereby declare that I/We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information/derived there from to any person other than a person to whom I/We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety & integrity of the State.

Dated

Signature of Contractor

Witness:

Postal Address

Address:

Occupation:

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for sum of …….....(Rupees.....
.....

.....

...)

The letters referred to below shall form part of this contract agreement: -

(a)

(b)

(c)

For & on behalf of the MD, MMRC.

Signatures .....

Dated:

Designation .....

GENERAL GUIDELINES

General Rules & Directions	1	All work proposed for execution by contract will be notified in a form of invitation to tender pasted by publication in News papers or posted on website as the case may be.This form will state the work to be carried out, as well as the date for submitting and opening tenders and the time allowed for carrying out the work, also the amount of earnest money to be deposited with the tender, and the amount of the additional security deposit and Performance guarantee to be deposited by the successful tenderer and the percentage, if any, to be deducted from bills. Copies of the specifications, designs and drawings and any other documents required in connection with the work signed for the purpose of identification by the officer inviting tender shall also be open for inspection by the contractor at the office of officer inviting tender during office hours.
	2	In the event of tender being submitted by a firm, it must be signed separately by each partner thereof or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power of attorney authorizing him to do so, such power of attorney to be produced with the tender, and it must disclose that the firm is duly registered under the Indian Partnership Act 1952.
	3	Receipts for payment made on account of work, when executed by a firm, must also be signed by all the partners, except where contractors are described in their tender as a firm, in which case the receipts must be signed in the name of the firm by one of the partners, or by some other person having due authority to give effectual receipts for the firm.
Applicable for Percentage Rate Tender only	4A	In case of Percentage Rate Tenders, contractor shall fill up the usual printed form, stating at what percentage below/above (in figures as well as in words) the total estimated cost given in Schedule of Quantities at Schedule-A, he will be willing to execute the work. The tender submitted shall be treated as invalid if :-
	i	The contractor does not quote percentage above/below on the total amount of tender or any section/sub head of the tender.
	ii	The percentage above/below is not quoted in figures & words both on the total amount of tender or any section/sub head of the tender.
	iii	The percentage quoted above/below is different in figures & words on the total amount of tender or any section/sub head of the tender.
		Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort including conditional rebates, will be summarily rejected.

	4B	In case the lowest tendered amount (estimated cost ± amount worked on the basis of percentage above/below) of two or more contractors is same, such lowest contractors will be asked to submit sealed revised offer in the form of letter mentioning percentage above/ below on estimated cost of tender including all sub sections/sub heads as the case may be, but the revised percentage quoted above/below on tendered cost or on each sub section/ sub head should not be higher than the percentage quoted at the time of submission of tender. The lowest tender shall be decided on the basis of revised offers.
		In case any of such contractor refuses to submit revised offer, then it shall be treated as withdrawal of his tender before acceptance and 50% of earnest money shall be forfeited.
		If the revised tendered amount of two more contractors received in revised offer is again found to be equal, the lowest tender, among such contractors, shall be decided by draw of lots in the presence of Dy.GM Civil, MMRC & the lowest contractors those have quoted equal amount of their tenders.
		In case all the lowest contractors those have quoted same tendered amount, refuse to submit revised offers, then tenders are to be recalled after forfeiting 50% of EMD of each.Contractor(s), whose earnest money is forfeited because of non- submission of revised offer, shall not be allowed to participate in the re-tendering process of the work.
	5	The officer inviting tender or his duly authorized assistant, will open tenders in the presence of any intending contractors who may be present at the time.
	6	The officer inviting tenders shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest or any other tender.
	7	The receipt of an accountant or clerk for any money paid by the contractor will not be considered as any acknowledgment or payment to the officer inviting tender and the contractor shall be responsible for seeing that he procures a receipt signed by the officer inviting tender or a duly authorized Cashier.
Applicable for percentage Rate Tender only	9	In case of Percentage Rate Tenders only percentage quoted shall be considered. Any tender containing item rates is liable to be rejected. Percentage quoted by the contractor in percentage rate tender shall be accurately filled in figures and words, so that there is no discrepancy.
Applicable for Percentage Rate Tender only	10	In Percentage Rate Tender, the tenderer shall quote percentage below/above (in figures as well as in words) at which he will be willing to execute the work. He shall also work out the total amount of his offer and the same should

<table>
<tr><td></td><td></td><td>be written in figures as well as in words in such a way that no interpolation is possible. In case of figures, the word ‘Rs.’ should be written before the figure of rupees and word ‘P’ after the decimal figures, e.g. ‘Rs. 2.15P and in case of words, the word ‘Rupees’ should precede and the word ‘Paisa’ should be written at the end.</td></tr>
<tr><td></td><td>11 (i)</td><td>The Contractor whose tender is accepted, will be required to furnish performance guarantee at specified percentage of the tendered amount as mentioned in Schedule 'E' and within the period specified in Schedule F. This guarantee shall be in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee of any Commercial Bank.</td></tr>
<tr><td></td><td>12</td><td>On acceptance of the tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from the Engineer-in-Charge shall be communicated in writing to the Engineer-in-Charge.</td></tr>
<tr><td></td><td>13</td><td>GST or any other tax applicable in respect of inputs procured by the contractor for this contract shall be payable by the Contractor and MMRC will not entertain any claim whatsoever in respect of the same. However, component of GST at time of supply of service (as provided in CGST Act 2017) provided by the contract shall be varied if different from that applicable on the last date of receipt of tender including extension if any.</td></tr>
<tr><td></td><td>14</td><td>Not used</td></tr>
<tr><td></td><td>15</td><td>The tender for composite work includes, in addition to building work, all other works such as sanitary and water supply installations drainage installation, electrical work, horticulture work, roads and paths etc</td></tr>
<tr><td></td><td>16</td><td>The contractor shall submit list of works which are in hand (progress) in the following form: -
<table>
<tr><td>Name of work</td><td>Name and particulars of Divn where work is being executed</td><td>Value of work</td><td>Position of works in</td><td>Remarks</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
</table>

CONDITIONS OF CONTRACT

Definitions	1.	The **Contract** means the documents forming the tender and acceptance thereof and the formal agreement executed between the competent authority on behalf of the MMRC and the Contractor, together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Engineer-in- Charge and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.
	2.	In the contract, the following expressions shall, unless the context otherwise requires, have the meanings, hereby respectively assigned to them:-
	i)	The expression **works** or **work** shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.
	ii)	The **Site** shall mean the land, places on, into or or where work is to be executed under the contract or any adjacent land, path or street or where work is to be executed under the contract or any adjacent land, path or street which may be temporally allotted or used for the purpose of carrying out the contract.
	iii)	The **Contractor** shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal personal representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such individual, firm or company.
	iv)	The **MMRC/MMRCL** means the Mumbai Metro Rail Corporation Limited
	v)	**Government** shall mean **Government of India** or **State Governmen**t as the case to be.
	vi)	The **Engineer-in-charge/Engineer** means the Engineer Officer/PMC nominated by Employer who shall supervise and be in charge of the work.
	vii)	The term **Director (Planning)** means Director (Planning/Real Estate Dev/NBFR) of MMRCL
	viii)	**Accepting Authority** shall mean the authority mentioned in Schedule 'F'.
	ix)	**Excepted Risk** are risks due to riots (other than those on account of contractor's employees), war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, military or usurped power, any acts of Government, damages from aircraft, acts of God, such as earthquake, lightening and unprecedented floods, and other causes over which the contractor has no control and accepted as such by the Accepting Authority or causes solely due to use or occupation by MMRC of the part of the works in

		respect of which a certificate of completion has been issued or a cause solely due to MMRCL's faulty design of works.
	x)	a) **Market Rate** shall be the rate as decided by the Engineer-in-Charge on the basis of the cost of materials and labour at the site where the work is to be executed plus the percentage mentioned in Schedule 'F' to cover, all overheads and profits. Provided that no extra overheads and profits shall be payable on the part(s) of work assigned to other agency(s) by the contractor as per terms of contract.
		b) Schedule(s) referred to in these conditions shall mean the relevant schedule(s) annexed to the tender documents or the standard Schedule of Rates as mentioned in Schedule 'F' hereunder, with the amendments thereto issued upto the date of receipt of the tender.
	xi)	**Department** means Planning Dept which invites tender as specified in schedule 'F'.
	xii)	**District Specifications** means the specifications followed by the MMRC in the area where the work is to be executed.
	xiii)	**Tendered value** means the value of the entire work as stipulated in the letter of award.
	xiv)	**Date of commencement of work:** The date of commencement of work shall be the date of start as specified in schedule 'F' or the first date of handing over of the site, whichever is later, in accordance with the phasing if any, as indicated in the tender document.
	xv)	**GST** shall mean Goods and Service Tax - Central, State and Inter State.
Scope and Performance	3	Where the context so requires, words imparting the singular only also include the plural and vice versa. Any reference to masculine gender shall whenever required include feminine gender and vice versa.
	4	Headings and Marginal notes to these General Conditions of Contract shall not be deemed to form part thereof or be taken into consideration in the interpretation or construction thereof or of the contract.
	5	The contractor shall be furnished, free of cost one certified copy of the contract documents except standard specifications, Schedule of Rates and such other printed and published documents, together with all drawings as may be forming part of the tender documents. None of these documents shall be used for any purpose other than that of this contract.
Works to be carried out	6	The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labourers, materials, tools, plants, equipment and transport which may be required in preparation of and for and in the full and entire execution and completion of the works. The descriptions given in the Schedule of Quantities (Schedule- A) shall, unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labours necessary in

		and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognized principles.
Sufficiency of Tender	7	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 Quantities, which rates and prices shall, except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the works.
Discrepancies and Adjustment of Errors	8	The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General Conditions.
	8.1	In the case of discrepancy between the schedule of Quantities, the Specifications and/ or the Drawings, the following order of preference shall be observed:- (i) Description of Schedule of Quantities. (ii) Particular Specification and Special Condition, if any. (iii) Drawings. (iv) SOR Specifications (MCGM, PWD , CPWD etc) (v) Indian Standard Specifications of B.I.S.
	8.2	If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.
	8.3	Any error in description, quantity or rate in Schedule of Quantities or any omission therefrom shall not vitiate the Contract or release the Contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.
Signing of Contract	9	The successful tenderer/contractor, on acceptance of his tender by the Accepting Authority, shall, within 15 days from the stipulated date of start of the work, sign the contract consisting of:-
	i)	the notice inviting tender, all the documents including drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.
	ii)	No payment for the work done will be made unless contract is signed by the contractor.

GENERAL CONDITION OF CONTRACT

CLAUSES OF CONTRACT

Clause 1		
Performance Guarantee	i)	The contractor shall submit an irrevocable Performance Guarantee at specified percentage of the tendered amount as mentioned in Schedule 'E', in addition to other deposits mentioned elsewhere in the contract for his proper performance of the contract agreement, (not withstanding and/or without prejudice to any other provisions in the contract) within period specified in Schedule 'F' from the date of issue of letter of acceptance. This period can be further extended by the Engineer- in-Charge up to a maximum period as specified in schedule 'F' on written request of the contractor stating the reason for delays in procuring the Performance Guarantee, to the satisfaction of the Engineer-in-Charge. This Guarantee shall be in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from any of the Commercial Banks. In case a fixed deposit receipt of any Bank is furnished by the contractor to the MMRC as part of the performance guarantee and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the MMRC to make good the deficit.
	ii)	The Performance Guarantee shall be submitted by the contractor on format as per GCC and shall be initially valid up to the stipulated date of completion plus minimum 6 months beyond that. In case the time for completion of work gets enlarged, the contractor shall get the validity of Performance Guarantee extended to cover such enlarged time for completion of work. After recording of the completion certificate for the work by the competent authority, the performance guarantee shall be returned to the contractor, without any interest. However, in case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guarantee shall be retained. The same shall be returned proportionately.
	iii)	The Engineer-in-Charge shall not make a claim under the performance guarantee except for amounts to which the MMRC is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:
	a)	Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer-in-Charge may claim the full amount of the Performance Guarantee.
	b)	Failure by the contractor to pay MMRC any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement, within 28 days of the service of notice to this effect by Engineer- in-Charge.

	iv)	In the event of the contract being determined or rescinded under provision of any of the Clause/Condition of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the MMRC
		On substantial Completion of any work which has been completed to such an extent that the intended purpose of the work is met and ready to use, then a provisional Completion certificate shall be recorded by the Engineer-in-Charge. The provisional certificate shall have appended with a list of outstanding balance item of work that need to be completed in accordance with the provisions of the contract.
		This provisional completion certificate shall be recorded by the concerned Engineer- in-charge with the approval of Director (Planning), if required. After recording of the provisional Completion Certificate for the work by the competent authority, the 80 % of performance guarantee shall be returned to the contractor, without any interest.
	v)	However in case of contracts involving Maintenance of building and services /any other work after construction of same building (DLP in this case) and services/ other work, then 40% of performance guarantee shall be returned to the contractor, without any interest after recording the provisional Completion certificate.
Clause 1A		
Recovery of Security Deposit		Not Applicable
Clause 2		
Compensation for Delay		If the contractor fails to maintain the required progress in terms of clause 5 or to complete the work and clear the site on or before the contract or justified extended date of completion as per clause 5 (excluding any extension under Clause 5.5) as well as any extension granted under clauses 12 and 15, he shall, without prejudice to any other right or remedy available under the law to the MMRC on account of such breach, pay as compensation the amount calculated at the rates stipulated below as the authority specified in schedule 'F' may decide on the amount of accepted Tendered Value of the work for every completed day/ month (as determined) that the progress remains below that specified in Clause 5 or that the work remains incomplete.
		Compensation for delay of work (i) With maximum rate @ 1% (one percent) maximum per month of delay to be computed on per day basis based on quantum of damage suffered due to stated delay on the part of Contractor.
		Provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 10 % of the accepted Tendered Value of work. In case no compensation has been decided by the authority in Schedule 'F' during the progress of work, this shall be no waiver of right to levy compensation by

		the said authority if the work remains incomplete on final justified extended date of completion. If the Engineer in Charge decides to give further extension of time allowing performance of work beyond the justified extended date, the contractor shall be liable to pay compensation for such extended period. If any variation in amount of contract takes place during such extended period beyond justified extended date and the contractor becomes entitled to additional time under clause 12, the net period for such variation shall be accounted for while deciding the period for levy of compensation. However, during such further extended period beyond the justified extended period, if any delay occurs by events under sub clause 5.2, the contractor shall be liable to pay compensation for such delay.
		This is without prejudice to right of action by the Engineer in Charge under clause 3 for delay in performance and claim of compensation under that clause.
		In case action under clause 2 has not been finalized and the work has been determined under clause 3, the right of action under this clause shall remain post determination of contract but levy of compensation shall be for days the progress is behind the schedule on date of determination, as assessed by the authority in Schedule F, after due consideration of justified extension. The compensation for delay, if not decided before the determination of contract, shall be decided after of determination of contract.
		The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the MMRC In case, the contractor does not achieve a particular milestone mentioned in schedule F, or the re-scheduled milestone(s) in terms of Clause 5.4, the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied as above. With-holding of this amount on failure to achieve a milestone, shall be automatic without any notice to the contractor. However, if the contractor catches up with the progress of work on the subsequent milestone(s), the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest, whatsoever, shall be payable on such withheld amount.
Clause 3		
When Contract can be Determined		Subject to other provisions contained in this clause, the Engineer-in-Charge may, without prejudice to his any other rights or remedy against the contractor in respect of any delay, not following safety norms , inferior workmanship, any claims for damages and/or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:
	i	If the contractor having been given by the Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work

		or that the work is being performed in an inefficient or otherwise improper or un-workman like manner shall omit to comply with the requirement of such notice for a period of seven days thereafter.
	ii	If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence and continues to do so after a notice in writing of seven days from the Engineer-in-Charge.
	iii	If the contractor fails to complete the work or section of work with individual date of completion on or before the stipulated or justified extended date, on or before such date of completion; and the Engineer in Charge without any prejudice to any other right or remedy under any other provision in the contract has given further reasonable time in a notice given in writing in that behalf as either mutually agreed or in absence of such mutual agreement by his own assessment making such time essence of contract and in the opinion of Engineer-in-Charge the contractor will be unable to complete the same or does not complete the same within the period specified.
	iv	If the contractor persistently neglects to carry out his obligations under the contract and/ or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge.
	v	If the contractor shall offer or give or agree to give to any person in MMRC service or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for MMRC.
	vi	If the contractor shall enter into a contract with MMRC in connection with which commission has been paid or agreed to be paid by him or to his knowledge, unless the particulars of any such commission and the terms of payment thereof have been previously disclosed in writing to the Engineer-in-Charge.
	vii	If the contractor had secured the contract with MMRC as a result of wrong tendering or other non-bonafide methods of competitive tendering or commits breach of Integrity Agreement.
	viii	If the contractor being an individual, or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administration of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport so to do, or if any application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors.
	ix	If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court or the

<table>
<tr><td></td><td></td><td>creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.</td></tr>
<tr><td></td><td>x</td><td>If the contractor shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days.</td></tr>
<tr><td></td><td>xi</td><td>If the contractor assigns (excluding part(s) of work assigned to other agency(s) by the contractor as per terms of contract), transfers, sublets (engagement of labour on a piece-work basis or of labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Engineer -in-Charge.</td></tr>
<tr><td></td><td>xii</td><td>When the contractor has made himself liable for action under any of the aforesaid cases (i) to (xi), the Engineer-in-Charge on behalf of the MMRC shall have powers:</td></tr>
<tr><td></td><td>a</td><td>To determine the contract as aforesaid so far as performance of work by the Contractor is concerned (of which determination notice in writing to the If the revised tendered amount (worked out on the basis of quoted rate of individual items) contractor under the hand of the Engineer-in-Charge shall be conclusive evidence). Upon such determination, the Earnest Money Deposit, and Performance Guarantee under the contract shall be liable to be forfeited and shall be absolutely at the disposal of the MMRC.</td></tr>
<tr><td></td><td>b</td><td>After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof, as shall be un-executed out of his hands and to give it to another contractor to complete the work. The contractor, whose contract is determined as above, shall not be allowed to participate in the tendering process for the balance work. In the event of above courses being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-Charge has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.</td></tr>
<tr><td>Clause 3A</td><td></td><td>In case, the work cannot be started due to reasons not within the control of the contractor within 1/8th of the stipulated time for completion of work or one month whichever is higher, either party may close the contract by giving notice to the other party stating the reasons. In such eventuality, the Performance Guarantee of the contractor shall be refunded within following time limits:

<table>
<tr><td>(i)</td><td>If the tendered value is up to Rs. 1 Crore</td><td>:- 15 days</td></tr>
</table>
</td></tr>
</table>

		(ii)	If the Tendered value of work is more than Rs. 1 Crore and up to Rs. 10 Crore	:- 21 days	
		(iii)	If the tendered value of work exceeds Rs. 10 Crore	:- 28 days	
		Neither party shall claim any compensation for such eventuality. This clause is not applicable for any breach of the contract by either party.			
Clause 4					
Contractor liable to pay compensation even if action not taken under Clause 3		In any case in which any of the powers conferred upon the Engineer-in-Charge by Clause3 thereof, shall have become exercisable and the same are not exercised, the non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole discretion of the Engineer-in-Charge which shall be final and binding on the contractor) use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof belonging to the contractor, or procured by the contractor 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 these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final, and binding on the contractor, clerk of the works, foreman or other authorized agent to remove such tools, plant, materials, or stores from the premises (within a time to be specified in such notice) in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.			
Clause 5					
Time and Extension for Delay		The time allowed for execution of the Works as specified in the Schedule 'F' or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the work shall commence from such time period as mentioned in			

		schedule 'F' or from the date of handing over of the site, notified by the Engineer-in-Charge, whichever is later.
		If the Contractor commits default in commencing the execution of the work as aforesaid, the performance guarantee shall be forfeited by the Engineer in Charge and shall be absolutely at the disposal of the MMRC without prejudice to any other right or remedy available in law.
	5.1	As soon as possible but within 7 (seven) working days of award of work and in consideration of
	a	Schedule of handing over of site as specified in the Schedule 'F'
	b	Schedule of issue of designs as specified in the Schedule 'F',
	i	the Contractor shall submit a Time and Progress Chart for each mile stone. The Engineer-in-Charge may within 7 (seven) working days thereafter, if required modify, and communicate the program approved to the contractor failing which the program submitted by the contractor shall be deemed to be approved by the Engineer-in-Charge. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Engineer- in-Charge and the Contractor within the limitations of time imposed in the Contract documents.
	ii	In case of non submission of construction programme by the contractor, the program approved by the Engineer-in-Charge shall be deemed to be final.
	iii	The approval by the Engineer-in-Charge of such programme shall not relieve the contractor of any of the obligations under the contract.
	iv	The contractor shall submit the Time and Progress Chart and progress report using the mutually agreed software or in other format decided by Engineer-in-Charge for the work done during previous month to the Engineer- in-charge on or before 5th day of each month failing which a recovery as per Schedule F to be decided by the NIT approving authority shall be made on per week or part basis in case of delay in submission of the monthly progress report
	5.2	If the work(s) be delayed by:-
	i	force majeure, or
	ii	abnormally bad weather, or
	iii	serious loss or damage by fire, or
	iv	civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or
	v	delay on the part of other contractors or tradesmen engaged by Engineer-in- Charge in executing work not forming part of the Contract, or
	vi	any other cause like above which, in the reasoned opinion of the Engineer-in- Charge is beyond the Contractor's control.
		then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer-in-Charge but shall nevertheless use constantly his best endeavours to prevent or make good the delay and shall do all that

		may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.
		The contractor shall have no claim of damages for extension of time granted or rescheduling of milestone/s for events listed in sub clause 5.2.
	5.3	In case the work is hindered in the opinion of the contractor, by the Department or for any reason / event, for which the Department is responsible, the authority as indicated in Schedule 'F' shall, if justified, give a fair and reasonable extension of time and reschedule the mile stones for completion of work. Such extension of time or rescheduling of milestone/s shall be without prejudice to any other right or remedy of the parties in contract or in law, provided further that for concurrent delays under this sub clause and sub clause 5.2 to the extent the delay is covered under sub clause 5.2 the contractor shall be entitled to only extension of time and no damages.
	5.4	Request for rescheduling of Mile stones or extension of time, to be eligible for consideration, shall be made by the Contractor in writing within fourteen days of the happening of the event causing delay on the prescribed forms i.e. Form of application by the contractor for seeking rescheduling of milestones or Form of application by the contractor for seeking extension of time (Appendix -XVI) respectively to the authority as indicated in Schedule 'F'. The Contractor shall indicate in such a request the period by which rescheduling of milestone/s or extension of time is desired. With every request for rescheduling of milestones, or if at any time the actual progress of work falls behind the approved programme by more than 10% of the stipulated period of completion of contract, the contractor shall produce a revised programme without causing any delay in execution of the work. A recovery as specified in Schedule 'F' shall be made on per day basis in case of delay in submission of the revised programme.
	5.4.1	In any such case the authority as indicated in Schedule 'F' may give a fair and reasonable extension of time for completion of work or reschedule the mile stones. Engineer-in-Charge shall finalize/ reschedule a particular mile stone before taking an action against subsequent mile stone. Such extension or rescheduling of the milestones shall be communicated to the Contractor by the authority as indicated in Schedule 'F' in writing, within 21 days of the date of receipt of such request from the Contractor in prescribed form. In event of non-application by the contractor for extension of time, Engineer-in-Charge after affording opportunity to the contractor, may give, supported with a programme (as specified under 5.4 above), a fair and reasonable extension within a reasonable period of occurrence of the event.
	5.5	In case the work is delayed by any reasons, in the opinion of the Engineer-in-Charge, by the contractor for reasons beyond the events mentioned in clause 5.2 or clause 5.3 or clause 5.4 and beyond the justified extended date, without prejudice to right to take action under Clause 3, the Engineer-in-Charge may grant extension of time required for completion of work without

		rescheduling of milestones. The contractor shall be liable for levy of compensation for delay for such extension of time.
Clause 6		
Computerized Measurement Book (CMB)/ Electronic Measurement Book (EMB) through CPWD ERP portal		Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement the value of work done in accordance with the contract. All measurements of all items having financial value shall be entered by the contractor and compiled in the shape of the Computerized Measurement Book (CMB) / Electronic Measurement Book (EMB) through CPWD ERP portal and Computerized Level Book (CLB) having pages of A-4 size as per the format of the department so that a complete record is obtained of all the items of works executed under the contract.
		All such measurements and levels recorded by the contractor or his authorized representative from time to time, during the progress of the work, shall be got checked by the contractor from the Engineer-in-Charge or his/her authorized representative as per interval or program fixed in consultation with Engineer-in-Charge or his/her authorized representative. In case of CMB/CLB, after the necessary corrections made by the Engineer-in-Charge or his/her authorized representative, the measurement sheets/ shall be returned to the contractor for incorporating the corrections and for resubmission to the Engineer-in-Charge for the dated signatures by the Engineer-in-Charge and the contractor or their representatives in token of their acceptance.
		In case of EMB, the contractor shall record measurement online on ERP Portal and shall raise RFI(Request for Inspection)online for checking the online measurements by the Engineer- in-Charge or his/her authorised representative as per programme or interval fixed in consultation with Engineer-in-Charge and/or his/her authorised representative. If after verification by the Engineer-in-Charge and/or his/her authorised representative, any change is required, then Engineer-in-Charge and/or his/her authorised representative seeking the change shall return the online rejected measurements to the contractor for incorporating the changes. The contractor shall resubmit such measurements online after making necessary changes. All the changes are to be finally authorised by the Engineer-in-Charge and/or his/her authorised representative.
		Whenever bill is due for payment, in case of CMB, the contractor would initially submit draft computerized measurement sheets and these measurement(s) would be got checked/ test checked from the Engineer-in-Charge and/ or his/her authorized representative. The contractor will, thereafter, incorporate such changes as may be done during these checks/ test checks in his draft computerized measurement(s) and submit to the department a computerized measurement book, duly bound, and with its pages machine numbered.

		In case of EMB, the contractor shall have to download EMB for the approved RFI (request for inspection), from ERP Portal, submit printout of final EMB, having pages of A-4 size without any corrections, duly bound and with its pages machine numbered.
		The Engineer-in-Charge and/ or his/her authorized representative would thereafter check this CMB /EMB and record the necessary certificates for their checks/ test checks. The final, fair, computerized measurement book (CMB) / downloaded copy of EMB /CLB given by the contractor, duly bound, with its pages machine numbered, should be 100% correct, and no cutting or over-writing in the measurement(s) would thereafter be allowed. If at all any error is noticed, the contractor shall have to submit afresh CMB / CLB /EMB with its pages duly machine numbered and bound, after getting the earlier MB cancelled by the department.
		Thereafter, the CMB / CLB / EMB shall be taken in the Engineer-in-Chief records, and allotted a number as per the Register of CMBs/ EMBs/ CLBs. This should be done before the corresponding bill is submitted to the Division Office for payment. The contractor shall submit two spare copies of such CMBs/ EMBs/CLBs for the purpose of reference and record by the various officers of the department. The contractor shall also submit to the department separately his computerized Abstract of Cost and the bill based on these measurements, duly bound, and its pages machine numbered along with two spare copies of the bill. Thereafter, this bill will be processed by the Division Office and allotted a number as per the register of CMBs/ EMBs/CLBs in the same way as done for the measurement book meant for measurements. The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for checking of measurements/levels by the Engineer-in-Charge or his/her authorized representative.
		Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available then a mutually agreed method shall be followed. The contractor shall give not less than seven days' notice to the Engineer-in-Charge or his/ her authorized representative-in-charge of the work before covering up or otherwise placing beyond the reach of checking and/or test checking the measurement of any work in order that the same may be checked and/or test checked and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of checking

		and/or test checking measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer-in-Charge or his/her authorized representative- in-charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of checking and/or test checking measurements without such notice having been given or the Engineer-in-Charge's consent being obtained in writing the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.
		Engineer-in-Charge or his/her authorized representative may cause either themselves or through another officer of the department to check the measurements/levels recorded by contractor and all provisions stipulated herein above shall be applicable to such checking of measurements or levels. It is also a term of this contract that checking and/or test checking the measurements/levels of any item of work in the CMB/ EMB/CLB and/ or its payment in the interim, on account of final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over measurement or defects noticed till completion of the defects liability period.
Clause 7		
Payment on intermediate certificate to be regarded as Advances		No payment shall be made for work, estimated to cost Rs. twenty lacs or less till after the whole of the work shall have been completed and certificate of completion given. For works estimated to cost over Rs. twenty lacs, the interim or running account bills shall be submitted by the contractor for the work executed on the basis of such recorded measurements on the format of the Department in triplicate on or before the date of every month fixed for the same by the Engineer-in-Charge. The contractor shall not be entitled to be paid any such interim payment if the gross work done together with net payment/ adjustment of advances for material collected, if any, since the last such payment is less than the amount specified in Schedule 'F', in which case the interim bill shall be prepared on the appointed date of the month after the requisite progress is achieved. Engineer-in- Charge shall arrange to have the bill verified by taking or causing to be taken, where necessary, the requisite measurements of the work. In the event of the failure of the contractor to submit the bills, no claims whatsoever due to delays on payment including that of interest shall be payable to the contractor. Payment on account of amount admissible shall be made by the Engineer-in-Charge certifying the sum to which the contractor is considered entitled by way of interim payment at such rates as decided by the Engineer- in-Charge. An amount of ad-hoc payment not less than 75% of the net amount of the bill under check, shall be made within 10 working days of submission of the bill by the Contractor to the Engineer-in-Charge or his Authorized Engineer together with the account of the material issued by the department, or dismantled materials, if

		any. The remaining payment is also to be made after final checking of the bill within 28 working days of submission of bill by the contractor. In case of delay in payment of intermediate bills after 45 days of submission of bill by the contractor, provided the bill submitted by the contractor found to be in order, a simple interest @ 5% (five percent) per annum shall be paid to the contractor from the date of expiry of prescribed time limit.
		All such interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Engineer-in-Charge relating to the work done or materials delivered forming part of such payment, may be modified or corrected by any subsequent such certificate(s) or by the final certificate and shall not by itself be conclusive evidence that any work or materials to which it relates is/are in accordance with the contract and specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Engineer-in-Charge under the contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract.
		Pending consideration of extension of date of completion, interim payments shall continue to be made as herein provided without prejudice to the right of the department to take action under the terms of this contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority. The Engineer-in-Charge in his sole discretion on the basis of a certificate from the Asstt. Engineer/JE to the effect that the work has been completed up to the level in question make interim advance payments without detailed measurements for work done (other than foundations, items to be covered under finishing items) up to lintel level (including sunshade etc.) and slab level, for each floor working out at 75% of the assessed value. The advance payments so allowed shall be adjusted in the subsequent interim bills to be submitted by the contractor within 10 days of the interim payment. In case of delay in submission of bill by the contractor a simple interest @ 10% per annum on the advance payment made shall be paid to the MMRC from the date of expiry of prescribed time limit.
Payments in composite Contracts		In case of composite tenders, running payment for the major component shall be made by Engineer-in-Charge of major discipline to the main contractor. Running payment for minor component shall be made by the Engineer-in-Charge of the discipline of minor component directly to the main contractor. In case main contractor fails to make the payment to the contractor associated by him within 15 days of receipt of each running account payment, then on the written complaint of contractor associated for such minor component, Engineer in charge of minor component shall serve the show cause to the

		main contractor and if reply of main contractor either not received or found unsatisfactory, he may make the payment directly to the contractor associated for minor component as per the terms and conditions of the agreement drawn between main contractor and associate contractor fixed by him. Such payment made to the associate contractor shall be recovered by Engineer-in-charge of major or minor component from the next R/A/ final bill due to main contractor as the case may be.
Clause 7A		No Running Account Bill shall be paid for the work till the applicable labour licenses, registration with EPFO, ESIC and BOCW Welfare Board, whatever applicable are submitted by the contractor to the Engineer-in-Charge.
Clause 7B		
Payment to third party		If the exigencies of the work so demand, the engineer-in-charge may allow payment to a third party, who is creditor to the contractor, after fulfilling the following conditions:- (a) The contractor gives an authority letter addressed to the engineer-in-charge on a non- judicial stamp paper of Rs.100 in the format given below. I/We authorize the Dy GM , ... MMRC to pay directly on my/our behalf to ..... (name of the third party) an amount of Rs.....(Rupees .....in words) for the work done or supplies made by ..... (name of the third party). I/We shall be responsible for the quality and quantity of the same under the provisions of agreement number ..... Signature of the contractor (b) The total payment to third party (or parties) shall not exceed 10% of the agreement cost of the work.
Clause 8		
Completion Certificate and Completion plans		Within ten days of the completion of the work, the contractor shall give notice of such completion to the Engineer-in-Charge and within thirty days of the receipt of such notice, the Engineer-in-Charge shall inspect the work and if there is no defect in the work, shall furnish the contractor with a final certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the contractor and/or (b) for which payment will be made at reduced rates, shall be issued. But no final certificate of completion shall be issued, nor shall the work be considered to be complete until the contractor shall have removed from the premises on which the work shall be executed all scaffolding, surplus materials, rubbish and all huts and sanitary arrangements required for his/their work people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floor or other parts of the building, in, upon, or about which the work is to be executed or of which he may have had possession for the purpose of the execution; thereof, and not until the work shall have been measured by the Engineer-in-Charge. If the contractor shall fail to comply with the requirements of this Clause as to removal of scaffolding, surplus materials and rubbish and all huts and sanitary arrangements as

		aforesaid and cleaning off dirt on or before the date fixed for the completion of work, the Engineer-in-Charge may at the expense of the contractor remove such scaffolding, surplus materials and rubbish etc., and dispose of the same as he thinks fit and clean off such dirt as aforesaid, and the contractor shall have no claim in respect of scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.
Clause 8A		
Contractor to keep Site Clean		The contractor shall submit completion plans for Internal and External Civil, Electrical and Mechanical Services within thirty days of the completion of the work, provided that the service plans having been issued for execution by the Engineer-in-Charge, unless the contractor, by virtue of any other provision in the contract, is required to prepare such plans.
		In case, the contractor fails to submit the completion plan as aforesaid, he shall be liable to pay a sum of 0.1 % (zero point one percent) of accepted Tendered Value or limit prescribed in Schedule F whichever is more as may be fixed by the authority as mentioned in Schedule F and in this respect the decision of the that authority shall be final and binding on the contractor.
Clause 9		
Payment of Final Bill		The final bill shall be submitted by the contractor in the same manner as specified in interim bills within 15 days of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Engineer-in-Charge whichever is earlier. No further claims shall 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 bill in respect of which there is no dispute, and for those items which are in dispute on account of quantity and/or rates shall be paid at approved quantity and/or rates by the Engineer-in- Charge, within **three months period** reckoned from the date of receipt of the bill by the Engineer in- Charge or his authorized Assistant Engineer/JE/DE, complete with account of materials issued by the Department and dismantled materials.
Clause 9A		
Payment of Contractor's Bills to Banks		Payments due to the contractor may, if so desired by him, be made to his bank, registered financial, co-operative or thrift societies or recognized financial institutions instead of direct to him provided that the contractor furnishes to the Engineer-in-Charge (1) an authorization in the form of a legally valid document such as a power of attorney conferring authority on the bank; registered financial, co-operative or thrift societies or recognized financial institutions to receive payments and (2) his own acceptance of the correctness of the amount made out as being due to him by MMRC or his signature on the bill or other claim preferred against MMRC before settlement by the Engineer-in-Charge of the account or claim by payment to the bank, registered financial, co-operative or thrift societies or recognized financial institutions. While the receipt given by such banks; registered financial, co-operative or thrift societies or recognized financial institutions shall constitute a full and sufficient discharge for the payment, the contractor shall whenever possible present his bills duly receipted and discharged

		through his bank, registered financial, cooperative or thrift societies or recognized financial institutions.
		Nothing herein contained shall operate to create in favour of the bank; registered financial, co-operative or thrift societies or recognized financial institutions any rights or equities vis MMRC
Clause 10A		
Materials to be provided by the Contractor		The contractor shall, at his own expense, provide all materials, required for the works.
		The contractor shall, at his own expense and without delay supply to the Engineer-in-Charge samples of materials to be used on the work and shall get these approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if requested by the Engineer-in- Charge furnish proof, to the satisfaction of the Engineer-in-Charge that the materials so comply. The Engineer-in-Charge shall within fifteen (15) days of supply of samples or within such further period as he may require intimate to the Contractor in writing whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the Engineer-in-Charge for his approval, fresh samples complying with the specifications laid down in the contract. When materials are required to be tested in accordance with specifications, approval of the Engineer-in-Charge shall be issued after the test results are received.
		The Contractor shall at his cost submit the samples of materials to be tested or analysed and shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and materials finally accepted by the Engineer-in-Charge. The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.
		The contractor shall, at his cost, make all arrangements and shall provide all facilities as the Engineer-in-Charge may require for collecting and preparing the required number of samples for such tests at such time and to such place or places as may be directed by the Engineer- in-Charge and bear all charges including testing charges. The Engineer -in- Charge or his authorized representative shall always have access to the works and to all workshops and places where work component is being prepared or from where materials, manufactured articles or machinery are being obtained for the works and the contractor shall afford every facility and every assistance in obtaining the right to such access.
		The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default, the Engineer-in-Charge shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full powers to require other proper materials to be substituted thereof and in case of default, the Engineer-in-Charge may cause the same to be supplied and all costs which may attend such removal and substitution shall be borne by the

		Contractor. The contractor shall at his own expense, provide a material testing lab at the site for conducting routine field tests. The lab shall be equipped at least with the testing equipment as specified in schedule F.
Clause 10 B		
Secured Advance on Materials	i)	No secured advance shall be paid for this work
Mobilization advance	ii)	Mobilization advances not exceeding 10% of the tendered amount may be given, if requested by the contractor in writing within 15 days of the order to commence the work. Such advance shall be released in two or more instalments to be determined by the Engineer- in-Charge. The amount of any instalment shall not exceed 5% of the tendered amount of the work. The first instalment of such advance shall be released by the Engineer-in- charge to the contractor on his request. The second and subsequent instalments shall be released by the Engineer-in-Charge only after the contractor furnishes a proof of the satisfactory utilization of full amount of the earlier instalment(s) to the satisfaction of the Engineer-in-Charge. The mobilization advance will be utilized for the following:
		Establishment of site office for contractor and Employer's/ Engineer-in-charge's staff, testing lab, labour camps & basic amenities services for labour/staff, cement go-down, reinforcement yard, stores etc. For purchase/mobilization of any type of tool, plant and machinery required for execution of work such as concrete batch mix plant, mixtures, transit mixtures, loader, excavators dumpers, DG sets, vibrators, hot mix bitumen plant, paver, rollers, testing lab equipment's etc. Barricading of site and procurement of Formwork/ shuttering/ staging material etc. Any other item as mentioned in NIT by the NIT approving authority. 90% of the price of new items and 50% of the depreciated price of old items will be considered for assessing the utilized amount of mobilization advance. Expenditure incurred on items/ materials which are measureable and payable under agreement/ extra items as well as materials eligible for secured advance will be excluded from utilized amount of mobilization advance, if any. The assessment of Engineer-in-Charge in this respect shall be final and binding.
Interest & Recovery		interest rate of last 4 months SBI MCLR +0.5% to be applied quarterly.
	iv)	If the circumstances are considered reasonable by the Engineer-in-Charge, the period mentioned in (ii) for request by the contractor in writing for grant of mobilization advance may be extended at the discretion of the Engineer-in-Charge.

Clause 10C		
Payment on Account of Increase in Prices/ Wages due to Statutory Order(s)		If after submission of tender, if the price of any material incorporated in the work and/ or wages of labour increases as a direct result of the coming into force of any fresh law or statutory rule or order (but not due to any variation of rate in GST applicable on such material(s) being considered under this clause) beyond the prices/ wages prevailing at the time of the last stipulated date of receipt of tenders including extensions, if any, for the work during contract period including the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, then the amount of the contract shall accordingly be varied.
		If after submission of the tender, the price of any material incorporated in the works and/or wages of labour as prevailing at the time of last stipulated date of receipt of tender including extensions, if any, is decreased as a direct result of the coming into force of any fresh law or statutory rules or order (but not due to any variation of rate in GST applicable on such material(s) being considered under this clause), MMRC shall in respect of materials incorporated in the works and/or labour engaged on the execution of the work after the date of coming into force of such law statutory rule or order be entitled to deduct from the dues of the contractor, such amount as shall be equivalent to the difference between the prices of the materials and/or wages as prevailed at the time of the last stipulated date for receipt of tenders including extensions if any, for the work and the prices of materials and/or wages of labour on the coming into force of such law, statutory rule or order. This will be applicable for the contract period including the justified period extended under the provisions of clause 5 of the contract without any action under clause 2.
		Engineer-in-Charge shall call books of account and other relevant documents from the contractor to satisfy himself about reasonability of increase in prices of materials and wages.
		The contractor shall, within a reasonable time of his becoming aware of any alteration in the price of any such materials and/or wages of labour, give notice thereof to the Engineer-in- Charge stating that the same is given pursuant to this condition together with all information relating thereto which he may be in position to supply.
Clause 10CC		
Price adjustment for works		**Not Applicable for this work**
Clause 10 D		
Dismantled Material Govt. Property		The contractor shall treat all materials obtained during dismantling of a structure, excavation of the site for a work, etc. as MMRC's property and such materials shall be disposed off to the best advantage of MMRC according to the instructions in writing issued by the Engineer-in-Charge
Clause 11		

Work to be Executed in Accordance with Specifications, Drawings, Orders etc.		The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work signed by the Engineer-in-Charge and the contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings and instructions as are not included in the standard specifications of MMRC specified in Schedule 'F' or in any Bureau of Indian Standard or any other, published standard or code or, Schedule of Rates or any other printed publication referred to elsewhere in the contract. The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.
Clause 12		
Deviations/ Variations Extent and Pricing		The Employer shall have power (i) to make alteration in, omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and (ii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any such instructions given to him in writing signed by the Engineer-in-Charge and such alterations, omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereafter provided. The completion cost of any agreement for works including works of execution, upgradation, aesthetic, special repair, addition/ alteration should not exceed 1.25 times of Tendered amount. Any further deviation beyond this limit upto 1.5 times of tendered amount shall be approved by the authority mentioned in schedule 'F' with recorded reason and in exceptional case/emergency works, MD, MMRC shall have full power to approve the deviation beyond 1.50 times of tendered amount with recorded reason and take suitable corrective action. 12.1 The time for completion of the works shall, in the event of any deviations resulting in additional cost over the tendered value sum being ordered, be extended, if requested by the contractor, as follows :

		(i) In the proportion which the additional cost of the altered, additional or substituted work, bears to the original tendered value plus (ii) 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge, However for emergency works, no additional time period will be granted by the Employer.
Deviation, Extra Items and Pricing	12.2	In the case of extra item(s) (items which are not available in the contract), the contractor may within fifteen days of the receipt of order or occurrence of the item(s), submit claim for market rate(s), supported with proper analysis of rate and manufacturer's specification for the work, invoices, vouchers, etc. (as applicable), failing which the rate(s) approved later by the Engineer-in-Charge shall be final and binding. Where the contractor submits claim for market rate(s) in the manner prescribed above, the Engineer-in-Charge shall, within 15 days of the receipt of the claims, after giving consideration to the analysis of rates and other documents submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined. The rate(s) of extra items so determined by the Engineer-in-Charge shall be final and binding on the contractor, and shall not be arbitral.
Deviation, deviated Quantities, Pricing		In the case of contract items which exceed the limit laid down in Schedule F, the contractor may within fifteen days of the receipt of order or occurrence of the excess, claim revision of the rates, supported with proper analysis of rate and invoices, vouchers, etc. (as applicable), for the quantity in excess of the above-mentioned limit. The Engineer-in-Charge shall within 15 days of receipt of the claims, after giving consideration to the analysis of rates and other documents submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined. The rate(s) so determined by the Engineer-in-Charge shall be final and binding on the contractor, and shall not be arbitrable.
	12.3	In the case of contract items which exceed the limit laid down in Schedule F, the Engineer-in-Charge shall after giving notice to the contractor within 15 days of submission of that bill by the contractor which contains such item(s), and after taking into consideration any reply received from the contractor within 7 days of the issue of such notice, reduce the rate for quantity in excess of the above-mentioned limit on the basis of market rates, within 15 days of the expiry of the said period of 7 days, and the contractor shall be paid in accordance with the rates so determined. The rate(s) so determined by the Engineer-in-Charge shall be final and binding on the contractor, and shall not be arbitrable
	12.4	The cost of any operation necessarily in contemplation of tenderer while quoting tender or necessary or incidental to proper

		execution of an item of work included in the Schedule of Quantities or in the Schedule of Rates mentioned in Schedule F, whether or not specifically indicated in the description of the item and the relevant specifications, shall be deemed to be included in the rates quoted by the tenderer or the rate given in the said Schedule of Rates, as the case may be. Nothing extra shall be admissible for such operations.
Clause 13		
Foreclosure of contract due to Abandonment or Reduction in Scope of Work		If at any time after acceptance of the tender or during the progress of work, the purpose or object for which the work is being done changes due to any supervening cause and as a result of which the work has to be abandoned or reduced in scope the Engineer-in-Charge shall give notice in writing to that effect to the contractor stating the decision as well as the cause for such decision and the contractor shall act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works. The contractor shall be paid at contract rates, full amount for works executed at site and, in addition, a reasonable amount as certified by the Engineer-in-Charge for the items hereunder mentioned which could not be utilized on the work to the full extent in view of the foreclosure; (i) Any expenditure incurred on preliminary site work, e.g. temporary access roads, temporary labour huts, staff quarters and site office; storage accommodation and water storage tanks. (ii)MMRC shall have the option to take over contractor's materials or any part thereof either brought to site or of which the contractor is legally bound to accept delivery from suppliers (for incorporation in or incidental to the work) provided, however MMRC shall be bound to take over the materials or such portions thereof as the contractor does not desire to retain. For materials taken over or to be taken over by MMRC, cost of such materials as detailed by Engineer-in- Charge shall be paid. The cost shall, however, take into account purchase price, cost of transportation and deterioration or damage which may have been caused to materials whilst in the custody of the contractor. (iii)Reasonable compensation for transfer of T & P from site to contractor's permanent stores or to his other works, whichever is less. If T & P are not transported to either of the said places, no cost of transportation shall be payable. (iv)Reasonable compensation for repatriation of contractor's site staff and imported labour to the extent necessary. The contractor shall, if required by the Engineer- in-Charge, furnish to him, books of account, wage books, time sheets and other relevant documents and evidence as may be necessary to enable him to certify the reasonable amount payable under this

		condition. The reasonable amount of items on (i), (iv) and (v) above shall not be in excess of 2% of the cost of the work remaining incomplete on the date of closure, i.e. total stipulated cost of the work as per accepted tender less the cost of work actually executed under the contract and less the cost of contractor's materials at site taken over by the MMRC as per item (ii) above. Provided always that against any payments due to the contractor on this account or otherwise, the Engineer-in-Charge shall be entitled to recover or be credited with any outstanding balances due from the contractor for advance paid in respect of any tool, plants and materials and any other sums which at the date of termination were recoverable by the MMRC from the contractor under the terms of the contract. In the event of action being taken under Clause 13 to reduce the scope of work, the contractor may furnish fresh Performance Guarantee on the same conditions, in the same manner and at the same rate for the balance tendered amount and initially valid up to the extended date of completion or stipulated date of completion if no extension has been granted plus minimum 28 days beyond that. Wherever such a fresh Performance Guarantee is furnished by the contractor the Engineer-in-Charge may return the previous Performance Guarantee
Clause 14		
Carrying out part work at risk & cost of contractor		If contractor: (i) At any time makes default during currency of work or does not execute any part of the work with due diligence and continues to do so even after a notice in writing of 7 working days in this respect from the Engineer-in-Charge; or (ii) Commits default in complying with any of the terms and conditions of the contract and does not remedy it or takes effective steps to remedy it within 7 working days even after a notice in writing is given in that behalf by the Engineer-in-Charge; or Fails to complete the work(s) or items of work with individual dates of completion, on or before the date(s) so determined, and does not complete them within the period specified in the notice given in writing in that behalf by the Engineer-in-Charge. (iii) The Engineer- in-Charge without invoking action under clause 3 may, without prejudice to any other right or remedy against the contractor which have either accrued or accrue thereafter to MMRC by a notice in writing to take the part work / part incomplete work of any item(s) out of his hands and shall have powers to : (a)Take possession of the site and any materials, constructional plant, implements, stores, etc., thereon; and/or (b)Carry out the part work / part incomplete work of any item(s) by any means at the risk and cost of the contractor.

		The Engineer-in-Charge shall determine the amount, if any, is recoverable from the contractor for completion of the part work/ part incomplete work of any item(s) taken out of his hands and execute at the risk and cost of the contractor, the liability of contractor on account of loss or damage suffered by MMRC because of action under this clause shall not exceed 10% of the tendered value of the work. In determining the amount, credit shall be given to the contractor with the value of work done in all respect in the same manner and at the same rate as if it had been carried out by the original contractor under the terms of his contract, the value of contractor's materials taken over and incorporated in the work and use of plant and machinery belonging to the contractor. The certificate of the Engineer-in-Charge as to the value of work done shall be final and conclusive against the contractor provided always that action under this clause shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the department are less than the amount payable to the contractor at his agreement rates, the difference shall not be payable to the contractor. Any excess expenditure incurred or to be incurred by MMRC in completing the part work/ part incomplete work of any item(s) or the excess loss of damages suffered or may be suffered by MMRC as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to MMRC in law or per as agreement be recovered from any money due to the contractor on any account, and if such money is insufficient, the contractor shall be called upon in writing and shall be liable to pay the same within 28 days. If the contractor fails to pay the required sum within the aforesaid period of 28 days, the Engineer-in-Charge shall have the right to sell any or all of the contractors' unused materials, constructional plant, implements, temporary building at site etc. and adjust the proceeds of sale thereof towards the dues recoverable from the contractor under the contract and if thereafter there remains any balance outstanding, it shall be recovered in accordance with the provisions of the contract. In the event of above course being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.
Clause 15		
Suspension of Work	i)	The contractor shall, on receipt of the order in writing of the Engineer-in-Charge, (whose decision shall be final and binding on the contractor) suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in-Charge may consider necessary so as not to cause any damage

		or injury to the work already done or endanger the safety thereof for any of the following reasons: (a)on account of any default on the part of the contractor or; (b)for proper execution of the works or part thereof for reasons other than the default of the contractor; or (c)for safety of the works or part thereof. The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Engineer in- Charge.
	ii)	If the suspension is ordered for reasons (b) and (c) in sub-para (i) above: (a) the contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25%, for completion of the item or group of items of work for which a separate period of completion is specified in the contract and of which the suspended work forms a part, and; (b) If the total period of all such suspensions in respect of an item or group of items or work for which a separate period of completion is specified in the contract exceeds thirty days, the contractor shall, in addition, be entitled to such compensation as the Engineer-in- Charge may consider reasonable in respect of salaries and/or wages paid by the contractor to his employees and labour at site, remaining idle during the period of suspension, adding thereto 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in- Charge within fifteen days of the expiry of the period of 28 days
	iii)	If the works or part thereof is suspended on the orders of the Engineer-in-Charge for more than three months at a time, except when suspension is ordered for reason (a) in subpara (i) above, the contractor may after receipt of such order serve a written notice on the Engineer-in-Charge requiring permission within fifteen days from receipt by the Engineer in- Charge of the said notice, to proceed with the work or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the contractor, if he intends to treat the suspension, where it affects only a part of the works as an omission of such part by MMRC or where it affects whole of the works, as an abandonment of the works by MMRC, shall within ten days of expiry of such period of 15 days give notice in writing of his intention to the Engineer-in-Charge. In the event of the contractor treating the suspension as an abandonment of the contract by MMRC, he shall have no claim to payment of any compensation on account of any profit or advantage which he might have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to such compensation, as the Engineer-in-Charge may consider reasonable, in respect of salaries and/or wages paid by him to his employees and labour at site, remaining idle in consequence adding to the total thereof 2% to cover indirect expenses of the contractor provided the

		contractor submits his claim supported by details to the Engineer-in-Charge within 28 days of the expiry of the period of 3 months
Clause 16		
Action in case Work 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 Quality Assurance Unit of the Consultant or any organization engaged by the MMRC 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 Engineer in charge of Quality Assurance or his subordinate officers or the officers of the organization engaged MMRC, that any work has been executed with unsound, imperfect, or unskilful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract, the contractor shall, on demand in writing which shall be made within one months (six months in the case of work costing Rs. 10 Lac and below except road work) 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 2 of the contract (for non-completion of the work in time) 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 authority specified in schedule 'F' 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.
Clause 17		
Contractor Liable for Damages, defects during		If the contractor or his working people or servants shall break, deface, injure or destroy any part of building in which they may be

defect liability Period		working, or any building, road, road kerb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wires, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work within twelve months (six months in the case of work costing Rs. Ten lacs and below except road work) after a certificate final or otherwise of its completion shall have been given by the Engineer in- Charge as aforesaid arising out of defect or improper materials or workmanship the contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Engineer-in-Charge cause the same to be made good by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the contractor, or from his additional security deposit or the proceeds of sale thereof or of a sufficient portion thereof. The additional security deposit of the contractor shall not be refunded before the expiry of twelve months (six months in the case of work costing Rs. Ten lacs and below except road work) after the issue of the certificate final or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later. Provided that in the case of road work, if in the opinion of the Engineer-in-Charge, half of the additional security deposit is sufficient, to meet all liabilities of the contractor under this contract, half of the additional security deposit will be refundable after six months and the remaining half after twelve months of the issue of the said certificate of completion or till the final bill has been prepared and passed whichever is later.
Clause 18		
Contractor to Supply Tools & Plants etc.		The contractor shall provide at his own cost all materials, machinery, tools & plants as specified in schedule F. In addition to this, appliances, implements, other plants, ladders, cordage, tackle, scaffolding and temporary works required for the proper execution of the work, whether original, altered or substituted and whether included in the specifications or other documents forming part of the contract or referred to in these conditions or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-Charge as to any matter as to which under these conditions he is entitled to be satisfied, or which he is entitled to require together with carriage therefore to and from the work. The contractor shall also supply without charge the requisite number of persons with the means and materials, necessary for the purpose of setting out works, and counting, weighing and assisting the measurement for examination at any time and from time to time of the work or materials. Failing his so doing, 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 this contract or otherwise and/or from his additional security deposit or the proceeds of sale thereof, or of a

		sufficient portions thereof.
Clause 18A		
Recovery of Compensation paid to Workmen		In every case in which by virtue of the provisions sub- section (1) of section 12 of the Workmen's Compensation Act. 1923, MMRC is obliged to pay compensation to a workman employed by the contractor, in execution of the works , MMRC will recover from the contractor , the amount of the compensation so paid: and, , without prejudice to the rights of the MMRC under sub-section(2) of section 12 , of the said Act, MMRC shall be at liberty to recover such amount or any part thereof by deducting it from the additional security deposit or from any sum due by MMRC to the contractor whether under this contract or otherwise. MMRC shall not be bound to contest any claim made against it under sub- section (1) of section 12, of the said Act, except on the written request of the contractor and upon his giving to MMRC full security for all costs for which MMRC might become liable in consequence of contesting such claim.
Clause 18B		
Ensuring Payment and Amenities to Workers if Contractor fails		In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and of the Contract Labour (Regulation and Abolition) Central Rules, 1971, MMRC is obliged to pay any amounts of wages to a workman employed by the contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act and the rules under Clause 19H or under the C.P.W.D. Contractor's Labour Regulations, or under the Rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by C.P.W.D. Contractors, MMRC will recover from the contractor, the amount of wages so paid or the amount of expenditure so incurred; and without prejudice to the rights of the MMRC under sub-section(2) of Section 20, and sub-section (4) of Section 21, of the Contract Labour (Regulation and Abolition) Act, 1970, MMRC shall be at liberty to recover such amount or any part thereof by deducting it from the bill or from any sum due by MMRC to the contractor whether under this contract or otherwise MMRC shall not be bound to contest any claim made against it under sub- section (1) of Section 20, sub-section (4) of Section 21, of the said Act, except on the written request of the contractor and upon his giving to the MMRC full security for all costs for which MMRC might become liable in contesting such claim.
Clause 19		
Labour Laws to be complied by the Contractor		The contractor shall comply with the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971. The contractor shall also obtain a valid licence under the said Act before the commencement of the work, and continue to have a valid licence until its completion. The contractor shall also comply with provisions of the Inter-State Migrant Workmen

		(Regulation of Employment and Conditions of Service) Act, 1979. The contractor shall also abide by the provisions of the Child and Adolescent Labour (Prohibition and Regulation) Act, 1986. The contractor shall also comply with the provisions of the building and other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996 and the building and other Construction Workers Welfare Cess Act, 1996. Any failure to fulfill these requirements shall attract the penal provisions of this contract arising out of the resultant non-execution of the work. **Clause 19A** No labour below the age of eighteen years shall be employed on the work
Payment of Wages		Payment of Wages (i) The contractor shall pay to labour employed by him either directly or through subcontractors, wages not less than fair wages as defined in the C.P.W.D. Contractor's Labour Regulations or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and the contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable. (ii) The contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wage to labour indirectly engaged on the work, including any labour engaged by his sub-contractors in connection with the said work, as if the labour had been immediately employed by him. (iii) In respect of all labour directly or indirectly employed in the works for performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with the Central Labour Regulations made by Government from time to time in regard to payment of wages, wage period, deductions from wages recovery of wages not paid and deductions unauthorizedly made, maintenance of wage books or wage slips publication of scale of wage and other terms of employment, inspection and submission of periodical returns and all other matters of the like nature or as per the provisions of the Contract Labour(Regulation and Abolition) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable
		iv) (a) The Engineer-in-Charge concerned shall have the right to deduct from the moneys due to the contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-fulfillment of the conditions of the contract for the benefit of the workers, non-payment of wages or of deductions made from his or their wages which are not justified by their terms of the contract or non-observance of

		the Regulations. (b) Under the provision of Minimum Wages (Central) Rules, 1950, the contractor is bound to allow to the labours directly or indirectly employed in the works one day rest for 6 days continuous work and pay wages at the same rate as for duty. In the event of default, the Engineer-in-Charge shall have the right to deduct the sum or sums not paid on account of wages for weekly holidays to any labours and pay the same to the persons entitled thereto from any money due to the contractor by the Engineer-in-Charge concerned. In the case of Union Territory of Delhi, however, as the all inclusive minimum daily wages fixed under Notification of the Delhi Administration No.F.12(162)MWO/DAB/ 43884-91, dated 31-12-1979 as amended from time to time are inclusive of wages for the weekly day of rest, the question of extra payment for weekly holiday would not arise.
		(v) The contractor shall comply with the provisions of the Payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees Liability Act, 1938, Workmen's Compensation Act, 1923, Industrial Disputes Act, 1947, Maternity Benefits Act, 1961, and the Contractor's Labour (Regulation and Abolition) Act 1970, or the modifications thereof or any other laws relating thereto and the rules made there under from time to time. (vi) The contractor shall indemnify and keep indemnified MMRC against payments to be made under and for the observance of the laws aforesaid and the C.P.W.D. Contractor's Labour Regulations without prejudice to his right to claim indemnity from his sub-contractors. (vii) The laws aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract. (viii) Whatever is the minimum wage for the time being, or if the wage payable is higher than such wage, such wage shall be paid by the contractor to the workmen directly without the intervention of Jamadar and that Jamadar shall not be entitled to deduct or recover any amount from the minimum wage payable to the workmen as and by way of commission or otherwise. (ix) The contractor shall ensure that no amount by way of commission or otherwise is deducted or recovered by the Jamadar from the wage of workmen.
Clause 19 C		In respect of all labour directly or indirectly employed in the work for the performance of the contractor's part of this contract, the contractor shall at his own expense arrange for the safety provisions as per C.P.W.D. Safety Code framed from time to time and shall at his own expense provide for all facilities in connection therewith. In case the contractor fails to make arrangement and provide necessary facilities as aforesaid, he shall be liable to pay a penalty as decided by the authority mentioned in Schedule F for each default and in addition, the Engineer-in- Charge shall be at liberty to make arrangement and provide facilities as aforesaid and

		recover the costs incurred in that behalf from the contractor.
Clause 19 D		The contractor shall submit by the 4th and 19th of every month, to the Engineer-in-Charge, a true statement showing in respect of the second half of the preceding month and the first half of the current month respectively:- (1) the number of labourers employed by him on the work, (2) their working hours, (3) the wages paid , (4) the accidents that occurred during the said for night showing the circumstances under which they happened and the extent of damage and injury caused by them, and (5) the number of female workers who have been allowed maternity benefit according to Clause 19F and the amount paid to them. Failing which the contractor shall be liable to pay to MMRC a sum as decided by the authority mentioned in Schedule F for each default or materially incorrect statement. The decision of the Engineer-in-Charge shall be final in deducting from any bill due to the contractor, the amount levied as fine and be binding on the contractor.
Clause 19 E		In respect of all labour directly or indirectly employed in the works for the performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with all the rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by the MMRC and its contractors.
Clause 19F		Leave and pay during leave shall be regulated as follows:- 1. Leave : (i) in the case of delivery - maternity leave not exceeding 8 weeks, 4 weeks up to and including the day of delivery and 4 weeks following that day, (ii) in the case of miscarriage - upto 3 weeks from the date of miscarriage. 2. Pay : (i) in the case of delivery - leave pay during maternity leave will be at the rate of the women's average daily earnings, calculated on total wages earned on the days when full time work was done during a period of three months immediately preceding the date on which she gives notice that she expects to be confined or at the rate of Rupee one only a day whichever is greater. (ii) in the case of miscarriage - leave pay at the rate of average daily earning calculated on the total wages earned on the days when full time work was done during a period of three months immediately

		preceding the date of such miscarriage. 3. Conditions for the grant of Maternity Leave: No maternity leave benefit shall be admissible to a woman unless she has been employed for a total period of not less than six months immediately preceding the date on which she proceeds on leave. 4. The contractor shall maintain a register of Maternity (Benefit) in the Prescribed Form as shown in appendix -I and II, and the same shall be kept at the place of work.
Clause 19G		In the event of the contractor(s) committing a default or breach of any of the provisions of the Centra and State Labour Regulations and Model Rules for the protection of health and sanitary arrangements for the workers as amended from time to time or furnishing any information or submitting or filing any statement under the provisions of the above Regulations and' Rules which is materially incorrect, he/they shall, without prejudice to any other liability, pay to the MMRC a sum as decided by the authority mentioned in Schedule F for every default, breach or furnishing, making, submitting, filing such materially incorrect statements and in the event of the contractor(s) defaulting continuously in this respect, the penalty may be enhanced to Rs.200/- per day for each day of default subject to a maximum of 5 percent of the estimated cost of the work put to tender. The decision of the Engineer-in-Charge shall be final and binding on the parties. Should it appear to the Engineer-in-Charge that the contractor(s) is/are not properly observing and complying with the provisions of the Central and State Contractor's Labour Regulations and Model Rules and the provisions of the Contract Labour (Regulation and Abolition) Act 1970, and the Contract Labour (R& A) Central Rules 1971, for the protection of health and sanitary arrangements for work-people employed by the contractor(s) (hereinafter referred as "the said Rules") the Engineer-in-Charge shall have power to give notice in writing to the contractor(s) requiring that the said Rules be complied with and the amenities prescribed therein be provided to the work-people within a reasonable time to be specified in the notice. If the contractor(s) shall fail within the period specified in the notice to comply with and/ observe the said Rules and to provide the amenities to the work-people as aforesaid, the Engineer-in-Charge shall have the power to provide the amenities hereinbefore mentioned at the cost of the contractor(s). The contractor(s) shall erect, make and maintain at his/ their own expense and as per approved standards all necessary huts and sanitary arrangements required for his/their work-people on the site in connection with the execution of the works, and if the same shall not have been erected or constructed, according to approved standards, the Engineer-in-Charge shall have power to give notice in writing to the contractor(s) requiring that the said huts and sanitary arrangements be remodelled and/or reconstructed according to approved standards, and if the contractor(s) shall fail to remodel or reconstruct such huts and sanitary arrangements according to approved standards within the period specified in the notice, the Engineer-in-Charge shall have the power to

		remodel or reconstruct such huts and sanitary arrangements according to approved standards at the cost of the contractor(s).
Clause 19H		The contractor(s) shall at his/their own cost provide his/their labour with a sufficient number of huts (hereinafter referred to as the camp) of the following specifications on a suitable plot of land to be approved by the Engineer-in-Charge
	i)	a) The minimum height of each hut at the eaves level shall be 2.10m (7 ft.) and the floor area to be provided will be at the rate of 2.7 sq.m. (28 sq.ft.) for each member of the worker's family staying with the labourer. b) The contractor(s) shall in addition construct suitable cooking places having a minimum area of 1.80m x 1.50m (6'x5') adjacent to the hut for each family. c) The contractor(s) shall also construct temporary latrines and urinals for the use of the labourers each on the scale of not less than four per each one hundred of the total strength, separate latrines and urinals being provided for women d) The contractor(s) shall construct sufficient number of bathing and washing places, one unit for every 25 persons residing in the camp. These bathing and washing places shall be suitably screened.
	ii)-a)	All the huts shall have walls of sun-dried or burnt-bricks laid in mud mortar or other suitable local materials as may be approved by the Engineer-in-Charge. In case of sun-dried bricks, the walls should be plastered with mud gobri on both sides. The floor may be kutcha but plastered with mud gobri and shall be at least 15 cm (6") above the surrounding ground. The roofs shall be laid with thatch or any other materials as may be approved by the Engineer-in-Charge and the contractor shall ensure that throughout the period of their occupation, the roofs remain water-tight.
	b)	The contractor(s) shall provide each hut with proper ventilation.
	c)	All doors, windows, and ventilators shall be provided with suitable leaves for security purposes.
	d)	There shall be kept an open space of at least 7.2m (8 yards) between the rows of huts which may be reduced to 6m (20 ft.) according to the availability of site with the approval of the Engineer-in-Charge. Back to back construction will be allowed.
	(iii)	Water Supply - The contractor(s) shall provide adequate supply of water for the use of labourers. The provisions shall not be less than two gallons of pure and wholesome water per head per day for drinking purposes and three gallons of clean water per head per day for bathing and washing purposes. Where piped water supply is available, supply shall be at stand posts and where the supply is from wells or river, tanks which may be of metal or masonry, shall be provided. The contractor(s) shall also at his/ their own cost make arrangements for laying pipe lines for water supply to his/ their labour camp from the existing mains wherever available, and shall pay all fees and charges therefore
	iv)	The site selected for the camp shall be high ground, with

		removed from jungle clearances, if required
	v)	Disposal of Excreta - The contractor(s) shall make necessary arrangements for the disposal of excreta from the latrines by trenching or incineration which shall be according to the requirements laid down by the Local Health Authorities. If trenching or incineration is not allowed, the contractor(s) shall make arrangements for the removal of the excreta through the Municipal Committee/authority and inform it about the number of labourers employed so that arrangements may be made by such Committee/authority for the removal of the excreta. All charges on this account shall be borne by the contractor and paid direct by him to the Municipality/authority. The contractor shall provide one sweeper for every eight seats in case of dry system.
	vi)	Drainage - The contractor(s) shall provide efficient arrangements for draining away sullage water so as to keep the camp neat and tidy.
	vii)	The contractor(s) shall make necessary arrangements for keeping the camp area sufficiently lighted to avoid accidents to the workers
	viii)	Sanitation - The contractor(s) shall make arrangements for conservancy and sanitation in the labour camps according to the rules of the Local Public Health and Medical Authorities
Clause 19 I		The Engineer-in-Charge may require the contractor to dismiss or remove from the site of the work any person or persons in the contractors' employ upon the work who may be incompetent or misconduct himself and the contractor shall forthwith comply with such requirements. In respect of maintenance/repair or renovation works etc. where the labour have an easy access to the individual houses, the contractor shall issue identity cards to the labourers, whether temporary or permanent and he shall be responsible for any untoward action on the part of such labour.
Clause 19 J		It shall be the responsibility of the contractor to see that the building under construction is not occupied by anybody unauthorized during construction, and is handed over to the Engineer- in-Charge with vacant possession of complete building. If such building though completed is occupied illegally, then the Engineer-in-Charge shall have the option to refuse to accept the said building/buildings in that position. Any delay in acceptance on this account will be treated as the delay in completion and for such delay, a levy upto 5% of tendered value of work may be imposed by the Superintending Engineer/ Chief Engineer whose decision shall be final both with regard to the justification and quantum and be binding on the contractor. However, the Superintending Engineer/ Chief Engineer, through a notice, may require the contractor to remove the illegal occupation any time on or before construction and delivery.
Clause 19 K		
Employment of skilled/semi skilled workers		The contractor shall, at all stages of work, deploy skilled/semi skilled tradesmen who are qualified and possess certificate in particular trade from Central /State Training Institute/Industrial Training Institute/ National Institute of construction Management and Research (NICMAR)/ National Academy of Construction,

		CIDC or any similar reputed and recognized Institute managed/ certified by State/Central Government. The number of such qualified tradesmen shall not be less than 20% of total skilled/semi skilled workers required in each trade at any stage of work. The contractor shall submit number of man days required in respect of each trade, its scheduling and the list of qualified tradesmen along with requisite certificate from recognized Institute to Engineer in charge for approval. Notwithstanding such approval, if the tradesmen are found to have inadequate skill to execute the work of respective trade, the contractor shall substitute such tradesmen within two days of written notice from Engineer- in- Charge. Failure on the part of contractor to obtain approval of Engineer-in Charge or failure to deploy qualified tradesmen will attract a compensation to be paid by contractor at the rate specified in schedule 'F' per such tradesman per day. Decision of Engineer in Charge as to whether particular tradesman possesses requisite skill and amount of compensation in case of default shall be final and binding. Provided always, that the provisions of this clause, shall not be applicable for works with estimated cost put to tender being less than Rs. 5 crores. For work costing more than Rs. 10 Crores, and uptoRs. 50 Crores, the contractor shall arrange on site training as per National Skill Development Corporation (NSDC) norms for at least 20% of the unskilled workers engaged in the project in co-ordination with the CPWD Regional Training Institute & National Skill Development Corporation (NSDC) for certification at the level of skilled/semi skilled tradesmen.
		For work costing more than Rs. 50 Crores, the contractor shall arrange on site training as per National Skill Development Corporation (NSDC) norms for at least 28% of the unskilled worker engaged in the project in coordination with the CPWD Regional Training Institute & National Skill Development Corporation (NSDC) for certification at the level of skilled/semi skilled tradesmen. The necessary space and workers shall be provided by the contractor and no claim what so ever shall be entertained.
Clause 19 L		
Contribution of EPF and ESI		The ESI and EPF contributions on the part of employer in respect of this contract shall be paid by the contractor. These contributions on the part of the employer paid by the contractor shall be reimbursed by the Engineer-in-charge to the contractor on actual basis. The verification of deployment labour will be done through biometric attendance system or any other suitable method by the Engineer in Charge. The applicable and eligible amount of EPF & ESI shall be reimbursed preferably within 7 days but not later than 28 days of submission of documentary proof of payment provided same are in order
Clause 20		

Minimum Wages Act to be Complied With		The contractor shall comply with all the provisions of the Minimum Wages Act, 1948, and Contract Labour (Regulation and Abolition) Act, 1970, amended from time to time and rules framed there under and other labour laws affecting contract labour that may be brought into force from time to time.
Clause 21		
Work not to be sublet. Action in case of in solvency		The contract shall not be assigned or sublet without the written approval of the Engineer-in- Charge. And if the contractor shall assign or sublet his contract, or attempt to do so, or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so, or if any 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 agent to any public officer or person in the employ of MMRC 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 on behalf of the MMRC shall have power to adopt the course specified in Clause 3 hereof in the interest of MMRC and in the event of such course being adopted, the consequences specified in the said Clause 3 shall ensue.
Clause 22		All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of MMRC without reference to the actual loss or damage sustained and whether or not any damage shall have been sustained.
Clause 23		
Changes in firm's Constitution to be Intimated		Where the contractor is a partnership firm, the previous approval in writing of the Engineer- inCharge shall be obtained before any change is made in the constitution of the firm. Where the contractor is an individual or a Hindu undivided family business concern, such approval as aforesaid shall likewise be obtained before the contractor enters into any partnership agreement where under the partnership firm would have the right to carry out the works hereby undertaken by the contractor. If previous approval as aforesaid is not obtained, the contract shall be deemed to have been assigned in contravention of Clause 21 hereof and the same action may be taken, and the same consequences shall ensue as provided in the said Clause 21.
Clause 24		
Life Cycle cost		The contractor shall be responsible for safety, quality and soundness of the buildings including structural elements beyond maintenance period. The contractor shall have obligation to rectify such defects minimum up to 1 (five) years from the date of completion of work. The defects have to be rectified within a reasonable time not exceeding thirty days after issue of notice by Engineer- in- Charge. If contractor does not take corrective action within 28 days, then action for debarring of the agency shall be taken by the appropriate authority.
Clause 25		
Settlement of Disputes by		Except where otherwise provided in the contract, all questions

Conciliation and Arbitration		and disputes relating to the meaning of the specifications, designs, drawings and instructions hereinbefore mentioned and as to the quality of workmanship or materials used in the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter.
	25.1	Conciliation: If the contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawing, record or decision given in writing by the Engineer-in-Charge; or if the Engineer-in-Charge considers any act or decision of the contractor on any matter in connection with or arising out of the contract or carrying out of the work to be unacceptable and disputed; such party may promptly refer such disputes and amount claimed for each dispute to the Managing Director, MMRC in the proforma prescribed in Appendix XVII mentioned in Schedule F, under intimation to the other party. The Conciliator may then request each party to submit to him a brief written statement describing the disputes and the points at issue. Each party shall send a copy of such statement to the other party. At any stage of the conciliation proceedings, the Conciliator may request a party to submit to him such additional information as he deems appropriate. When it appears to the Conciliator that there exist elements of a settlement which may be acceptable to the parties, he shall formulate the terms of a possible settlement and submit them to the parties for their observations. After receiving the observations of the parties, he may re-formulate the terms of a possible settlement in the light of such observations. If the parties reach agreement on a settlement of the disputes, they may draw up and sign a written settlement agreement on non-judicial stamp paper as per Stamp Act. The Conciliator shall authenticate the settlement agreement and furnish a copy thereof to each party. The termination of conciliation proceedings shall be in accordance with Section 76 of The Arbitration and Conciliation Act, 1996. No party shall be represented before the said Conciliator by an advocate or legal counsel. The conciliation proceedings shall be completed within 45 days from the receipt of reference. This time may be enlarged by 15 days by the Conciliator. The conciliation proceedings shall be deemed to have been terminated at the end of 80 days (Eighty days) from the receipt of reference.
	25.2	Arbitration: If the aforesaid conciliation proceedings fail or the Conciliator fails to give proposal for settlement within the aforesaid period, either party may promptly give notice in the proforma prescribed in Appendix XVIII, under intimation to the other party, to the Chief Engineer concerned with the work (as applicable), hereinafter referred to as the Arbitrator Appointing Authority as indicated in Schedule F, for appointment of Arbitrator.

		However, a party may seek appointment of Arbitrator without taking recourse to the process of conciliation mentioned in sub-clause 25.1 above. In the event of either party giving a notice to the Arbitrator Appointing Authority for appointment of Arbitrator, the said Authority shall appoint Arbitrator as per the procedure given below and refer such disputes to arbitration. (a)Number of Arbitrators: If the contract amount is less than Rs.100 crore, the disputes may be referred for adjudication by a sole Arbitrator. If the contract amount is Rs.100 crore or more, the disputes may be referred to an Arbitral Tribunal of three Arbitrators. (b)Qualification of Arbitrators: It is a term of this contract that each member of the Arbitral Tribunal shall be Graduate Engineer with experience in execution of public works engineering contracts, and he should have worked earlier at a level not lower than the Chief Engineer (equivalent to level of Joint Secretary to the Government of India). The aforesaid educational qualification and work experience shall be mandatory for appointment as Arbitrator. The age of Arbitrator at the time of appointment shall not exceed 75 years. An Arbitrator may be appointed notwithstanding the total number of active arbitration cases with him. (c)Parties to select Arbitrator: Based on the criteria specified above, a list of empanelled Arbitrators will be prepared in MMRC, and the parties shall have option to select an Arbitrator from the list sent to them
Contractor to indemnify MMRC		The contractor shall fully indemnify and keep indemnified the MMRC against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claims made under or action brought against MMRC in respect of any such matters as aforesaid, the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expense, to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify the MMRC if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Engineer-in-Charge in this behalf.
Clause 27		
Lumpsum Provisions in Tender		When the estimate on which a tender is made includes lump sum in respect of parts of the work, the contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates as are payable under this contract for such items, or if the part of the work in question is not, in the opinion of the Engineer-in Charge payable of

		measurement, the Engineer-in-Charge may at his discretion pay the lump-sum amount entered in the estimate, and the certificate in writing of the Engineer-in Charge shall be final and conclusive against the contractor with regard to any sum or sums payable to him under the provisions of the clause.
Clause 28		
Action where no Specifications are Specified		In the case of any class of work for which there is no such specifications as referred to in Clause 11, such work shall be carried out in accordance with the Bureau of Indian Standards Specifications. In case there are no such specifications in Bureau of Indian Standards, the work shall be carried out as per manufacturers' specifications, if not available then as per state District Specifications. In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-Charge
Clause 29		
Withholding and lien in respect of sum due from contractor	i)	Whenever any claim or claims for payment of a sum of money arises out of or under the contract or against the contractor, the Engineer-in-Charge shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the additional security/bill , if any deposited by the contractor and for the purpose aforesaid, the Engineer-in-Charge shall be entitled to withhold the additional security deposit, if any, furnished as the case may be and also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, the Engineer-in-Charge shall be entitled to withhold and have a lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found payable or which may at any time thereafter become payable to the contractor under the same contract or any other contract with the Engineer-in-Charge or any contracting person through the Engineer-in-Charge pending finalization of adjudication of any such claim. It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in-Charge will be kept withheld or retained as such by the Engineer-in-Charge till the claim arising out of or under the contract is determined by the arbitrator(if the contract is governed by the arbitration clause) by the competent court, as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the contractor. For the purpose of this clause, where the contractor is a partnership firm or a limited company, the Engineer-in Charge shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company as the case may be, whether in his individual capacity or otherwise.

	ii)	MMRC shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract, etc., to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the contractor under the contract or any work claimed to have been done by him under the contract and found not to have been executed, the contractor shall be liable to refund the amount of over-payment and it shall be lawful for MMRC to recover the same from him in the manner prescribed in sub-clause (i) of this clause or in any other manner legally permissible; and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by MMRC to the contractor, without any interest thereon whatsoever. Provided that the MMRC shall not be entitled to recover any sum overpaid, nor the contractor shall be entitled to payment of any sum paid short where such payment has been agreed upon between the Engineer-in-Charge.
Clause 29A		
Lien in respect of claims in other Contracts		Any sum of money due and payable to the contractor under the contract may be withheld or retained by way of lien by the Engineer-in- Charge or any other contracting person or persons through Engineer-in- Charge against any claim of the Engineer-in-Charge such other person or persons in respect of payment of a sum of money arising out of or under any other contract made by the contractor with the Engineer- in-Charge or with such other person or persons. It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the Engineer-in-Charge will be kept withheld or retained as such by the Engineer-in-Charge or till his claim arising out of the same contract or any other contract is either mutually settled or determined by the arbitration clause or by the competent court, as the case may be and that the contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.
Clause 29B		
Employment of coal mining or controlled area labour not Permissible		Not applicable to this contract.
Clause 28		
Water for Works		The contractor(s) shall make his/their own arrangements for water required for the work and nothing extra will be paid for the same. This will be subject to the following conditions. (i) That the water used by the contractor(s) shall be fit for construction purposes to the satisfaction of the Engineer-in-Charge. (ii)The Engineer-in-Charge shall make alternative arrangements for supply of water at the risk and cost of contractor(s) if the

		arrangements made by the contractor(s) for procurement of water are in the opinion of the Engineer-in- Charge, unsatisfactory.
Clause 28A		
Alternate water Arrangements		The contractor shall not be allowed to construct temporary wells in MMRC/Government land for taking water for construction purposes. He has to make his own alternate arrangement as per requirement.
Clause 31		
Hire of Plant & Machinery		The contractor shall arrange at his own expense all tools, plant, machinery and equipment (hereinafter referred to as T&P) required for execution of the work
Clause 32		
Employment of Technical Staff and employees		Contractors Superintendence, Supervision, Technical Staff & Employees
	i)	The contractor shall provide all necessary superintendence during execution of the work and all along thereafter as may be necessary for proper fulfilling of the obligations under the contract. The contractor shall immediately after receiving letter of acceptance of the tender and before commencement of the work, intimate in writing to the Engineer-in-Charge, the name(s), qualifications, experience, age, address(s) and other particulars along with certificates, of the principal technical representative to be in charge of the work and other technical representative(s) who will be supervising the work. Minimum requirement of such technical representative(s) and their qualifications and experience shall not be lower than specified in Schedule 'F'. Even of the contractor (or partner(s) in case of firm/ company)is himself / herself an Engineers, it is necessary on the part of the contractor to employ principal technical representative / technical representative (s) as per stipulation in Schedule 'F'. The Engineer-in-Charge shall within 3 days of receipt of such communication intimate in writing his approval or otherwise of such a representative(s) to the contractor. Any such approval may at any time be withdrawn and in case of such withdrawal, the contractor shall appoint another such representative(s) according to the provisions of this clause. Decision of the tender accepting authority shall be final and binding on the contractor in this respect. Such a principal technical representative and other technical representative(s) shall be appointed by the contractor soon after receipt of the approval from Engineer-in-charge and shall be available at site before start of work. All the provisions applicable to the principal technical representative under the Clause will also be applicable to other technical representative(s) The principal technical representative and other technical representative(s) shall be

		present at the site of work for supervision at all times when any construction activity is in progress and also present himself/themselves, as required, to the Engineer-in-Charge and/or his designated representative to take instructions. Instructions given to the principal technical representative or other technical representative(s) shall be deemed to have the same force as if these have been given to the contractor. The principal technical representative and other technical representative(s) shall be actually available at site fully during all stages of execution of work, during recording/checking/test checking of measurements of works and whenever so required by the Engineer-in-Charge and shall also note down instructions conveyed by the Engineer-in-Charge or his designated representative(s) in the site order book and shall affix his/their signature in token of noting down the instructions and in token of acceptance of measurements/checked measurements/ test checked measurements. The representative(s) shall not look after any other work. Substitutes, duly approved by Engineer-in-Charge of the work in similar manner as aforesaid shall be provided in event of absence of any of the representative(s) by more than two days. If the Engineer-in-Charge, whose decision in this respect is final and binding on the contractor, is convinced that no such technical representative(s) is/are effectively appointed or is/are effectively attending or fulfilling the provision of this clause, a recovery (non refundable) shall be effected from the contractor as specified in Schedule 'F' and the decision of the Engineer-In-Charge as recorded in the site order book and measurement recorded checked/test checked in Measurement Books shall be final and binding on the contractor. Further if the contractor fails to appoint suitable technical Principal technical representative and/or other technical representative(s) and if such appointed persons are not effectively present or are absent by more than two days without duly approved substitute or do not discharge their responsibilities satisfactorily, the Engineer-in-Charge shall have full powers to suspend the execution of the work until such date as suitable other technical representative(s) is/are appointed and the contractor shall be held responsible for the delay so caused to the work. The contractor shall submit a certificate of employment of the technical representative(s) (in the form of copy of Form-16 or CPF deduction issued to the Engineers employed by him) along with every on account bill/ final bill and shall produce evidence if at any time so required by the Engineer-in-Charge.
	ii)	The contractor shall provide and employ on the site only such technical assistants as are skilled and experienced in their respective fields and such foremen and supervisory staff as are competent to give proper supervision to the work. The contractor shall provide and employ skilled, semiskilled and unskilled labour as is necessary for proper and timely execution of the work. The Engineer-in-Charge shall be at liberty to object to and

		require the contractor to remove from the works any person who in his opinion misconducts himself, or is incompetent or negligent in the performance of his duties or whose employment is otherwise considered by the Engineer-in-Charge to be undesirable. Such person shall not be employed again at works site without the written permission of the Engineer-in-Charge and the persons so removed shall be replaced as soon as possible by competent substitutes.
Clause 33		
Levy/Taxes payable by Contractor		(i) GST, Building and other Construction Workers Welfare Cess or any other tax, levy or Cess in respect of input for or output by this contract shall be payable by the contractor and MMRC shall not entertain any claim whatsoever in this respect except as provided under Clause 38. (ii) The contractor shall deposit royalty and obtain necessary permit for supply of the red bajri, stone, kankar, etc. from local authorities (iii) If pursuant to or under any law, notification or order any royalty, cess or the like becomes payable by the Government of India and does not any time become payable by the contractor to the State Government, Local authorities in respect of any material used by the contractor in the works, then in such a case, it shall be lawful to the Government of India and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from dues of the contractor.
Clause 34		
Conditions for reimbursement of levy/taxes if levied after receipt of Tenders	i)	All tendered rates shall be inclusive of any tax, levy or cess applicable on last stipulated date of receipt of tender including extension if any. No adjustment i.e. increase or decrease shall be made for any variation in the rate of GST, Building and Other Construction Workers Welfare Cess or any tax, levy or cess applicable on inputs. However, effect of variation in rates of GST or Building and Other Construction Workers Welfare Cess or imposition or repeal of any other tax, levy or cess applicable on output of the works contract shall be adjusted on either side, increase or decrease. Provided further that for Building and Other Construction Workers Welfare Cess or any tax (other than GST), levy or cess varied or imposed after the last date of receipt of tender including extension if any, any increase shall be reimbursed to the contractor only if the contractor necessarily and properly pays such increased amount of taxes/ levies/cess. Provided further that such increase including GST shall not be made in the extended period of contract for which the contractor alone is responsible for delay as determined by

		authority for extension of time under Clause 5 in Schedule F.
	ii)	The contractor shall keep necessary books of accounts and other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by a duly authorized representative of the MMRC and/or the Engineer-in Charge and shall also furnish such other information/document as the Engineer-in Charge may require from time to time.
	iii)	The contractor shall, within a period of 28 days of the imposition of any such further tax or levy or cess, or variation or repeal of such tax or levy or cess give a written notice thereof to the Engineer-in-charge that the same is given pursuant to this condition, together with all necessary information relating thereto.
Clause 35		
Termination of Contract on death of contractor		Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Engineer in Charge on behalf of the MD, MMRCL shall have the option of terminating the contract without levy compensation to the contractor.
Clause 36		
If relative working in MMRC then the contractor not allowed to tender		The contractor shall not be permitted to tender for works in the MMRC responsible for award and execution of contracts in which his near relative is posted as an officer in any capacity between the grades of the Asst Engineer/Deputy Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Gazetted Officer in the MMRC. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department. If however the contractor is registered in any other department, he shall be debarred from tendering in MMRC for any breach of this condition. NOTE: By the term "near relatives" is meant wife, husband, parents and grandparents, children and grand children, brothers and sisters, uncles, aunts and cousins and their corresponding in-laws.
Clause 37		
No Gazetted Engineer to work as Contractor within one year of retirement		No engineer of gazetted rank or other gazetted officer employed in engineering or administrative duties in an engineering department of the Government of India/State Government/MMRC shall work as a contractor or employee of a contractor for a period of one year after his retirement from government service without the previous permission of Government of India/MMRC in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of Government of India as aforesaid, before submission of the tender or engagement in the contractor's service, as the case may be.

Clause 38		
Theoretical consumption of Material	i)	After completion of the work and also at any intermediate stage in the event of Non reconciliation of materials issued theoretical quantity of materials used in the work shall be calculated on the basis and method given hereunder:- (a) Quantity of cement & bitumen shall be calculated on the basis of quantity of cement & bitumen required for different items of work as shown in the Schedule of Rates mentioned in Schedule 'F'. In case any item is executed for which standard constants for the consumption of cement or bitumen are not available in the above mentioned schedule/statement or cannot be derived from the same shall be calculated on the basis of standard formula to be laid down by the Engineer-in-Charge. (b) Theoretical quantity of steel reinforcement or structural steel sections shall be taken as the quantity required as per design or as authorized by Engineer in-Charge, including authorized lappages, chairs etc. plus 3% wastage due to cutting into pieces, such theoretical quantity being determined and compared with the actual, each diameter wise, section wise and category wise separately. (c) Theoretical quantity of G.I. & C.I. or other pipes, conduits, wires and cables, pig lead and G.I./M.S. sheets shall be taken as quantity actually required and measured plus 5% for wastage due to cutting into pieces (except in the case of G.I./M.S. sheets it shall be 10%), such determination & comparison being made diameter wise & category wise. (d) For any other material as per actual requirements. Over the theoretical quantities of materials so computed a variation shall be allowed as specified in Schedule 'F' For non scheduled items, the decision of the Engineer-In-Charge regarding theoretical quantities of materials which should have been actually used, shall be final and binding on the contractor.
	ii)	The said action under this clause is without prejudice to the right of MMRC to take action against the contractor under any other conditions of contract for not doing the work according to the prescribed specifications.
Clause 39		
Compensation during warlike situations		The work (whether fully constructed or not) and all materials, machines, tools and plants, scaffolding, temporary buildings and other things connected therewith shall be at the risk of the contractor until the work has been delivered to the Engineer-in-Charge and a certificate from him to that effect obtained. In the event of the work or any materials properly brought to the site for incorporation in the work being damaged or destroyed in consequence of hostilities or warlike operation, the contractor shall when ordered (in writing) by the Engineer in-Charge to remove any debris from

		the site, collect and properly stack or remove in store all serviceable materials salvaged from the damaged work and shall be paid at the contract rates in accordance with the provision of this agreement for the work of clearing the site of debris, stacking or removal of serviceable material and for reconstruction of all works ordered by the Engineer-in-Charge, such payments being in addition to compensation upto the value of the work originally executed before being damaged or destroyed and not paid for. In case of works damaged or destroyed but not already measured and paid for, the compensation shall be assessed by the Engineer-In-Charge upto Rs.2,00,000/-- and by the next higher officer concerned for a higher amount. The contractor shall be paid for the damages/destruction suffered and for restoring the material at the rate based on analysis of rates tendered for in accordance with the provision of the contract. The certificate of the Engineer-in-Charge regarding the quality and quantity of materials and the purpose for which they were collected shall be final and binding on all parties to this contract. Provided always that no compensation shall be payable for any loss in consequence of hostilities or warlike operations (a) unless the contractor had taken all such precautions against air raid as are deemed necessary by the A.R.P. (Air Raid Precaution) Officers or the Engineer-in- Charge (b) for any material etc. not on the site of the work or for any tools, plant, machinery, scaffolding, temporary building and other things not intended for the work. In the event of the contractor having to carry out reconstruction as aforesaid, he shall be allowed such extension of time for its completion as is considered reasonable.
Clause 40		
Apprentices Act provisions to be complied with		The contractor shall comply with the provisions of the Apprentices Act, 1961 and the rules and orders issued there under from time to time. If he fails to do so, his failure will be a breach of the contract and the Engineer-In-Charge may, in his discretion, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.
Clause 41		
Release of Security deposit after labour clearance		Not Applicable

PROJECT SPECIFIC CONDITIONS

1. GENERAL:-

Project Specific Conditions or Special Conditions shall be read in conjunction with the General Conditions of contract. Technical specifications, drawings, any other documents forming part of this contract and amendments / corrections thereto wherever the context so requires. Notwithstanding the subdivision of documents in to these separate sections and volumes every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with into the contract so far as it may be practicable to do so. Where any portion of the general condition of contract is repugnant to or at variance with any provisions of the special conditions of the contract unless a different intension appears, the provision of the special condition of the contract shall be deemed to override the provision of general conditions of contract and shall to the extent of such repugnancy, or variations, prevail.

2. COMPLETION SCHEDULE: -

The works shall be executed strictly as per time schedule mentioned in NIT. Contractor shall have to plan his construction program and activities so as to complete the work in the stipulated period. The period of completion given includes the time required for mobilization as well as testing, rectification, if any retesting and completion in all respects to the entire satisfaction of Engineer-in-charge.

3. BILL OF QUANTITIES: -

The Bill of Quantities shall be read in conjunction with General Conditions of Contract, Special Conditions of Contract, Technical Specifications, Drawings and any other Document forming a part of this tender. The quantities shown against the various items are only approximate and subject to variations as made in General Conditions of the Contract.

4. TEMPORARY WORKS :-

4.1 The tenderer should see the approaches and conditions of the same. If any approach from main road is required at site or existing approach is to be made and maintained for cartage of materials etc. by the contractor, the same shall be provided, improved and maintained by the contractor at his own cost.

4.2 All temporary and ancillary works including enabling works connected with the work shall be responsibility of the contractor and the price quoted by

them shall be deemed to have included the cost of such works which shall be removed by the contractor at his cost, immediately after completion of the work.

4.3 SUFFICIENCY OF TENDER: -

a. Particulars and data furnished in the various sections of the tender documents need not be taken as complete by themselves. They are intended to serve as rough guidance only for the contractors to quote for the item rate tender. The tender shall, therefore, in their own interest examine the drawings, conditions of contract and specifications of work furnished in the tender documents. They shall also inspect the site and satisfy themselves on their own as to the hydrological, climatic and physical conditions prevailing at site, the nature, extent and practicability of works, all existing and required roads and other means of communications and access to site, royalties and ferry charges, if any labour and probable site for labour camps, stores and godown etc.

b. They shall also obtain for themselves all necessary information as to risks, contingencies and other circumstances which may affect or influence their tender. No extra charges consequent on any insufficient appreciation or other wise shall be allowed. 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 bills of quantities which rates and price shall except as otherwise provided cover all his obligations under the contract and all matters and things necessary for the proper completion of the work.

c. Should there be any discrepancy in or any doubt or obscurity as to the meaning of any of the tender documents, clarification should be sought by e-mail sufficiently in advance of the last date fixed for the receipt of the tender from the concerned Asst. Gen. Manager Engg. The department will have a right to make any amendments in the tender documents and any such changes will be intimated to the tender at least three days before the date fixed for receipt of tender.

5. STORES AND MATERIALS: -

a. All the stores and materials required for the satisfactory completion of the work shall be arranged by the contractor from his own sources/open market. No claim whatsoever shall be entertained by the Authority on account of delay in either providing these materials or non-availability of these materials in the market.

b. The contractor shall, upon demand forward for the Engineer-in-charge's inspection, test certificates rendered by the suppliers for all materials furnished by the contractor

c. All materials brought on the site of work and meant to be used in the same, shall be the best of their respective kind and to the approval of the Engineer-in-charge. The Engineer-in-charge 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 so the particular kind in question are available in the market.

d. All materials to be used on works shall bear I. S. I. certification mark unless otherwise the make specified in the item or special conditions appended with tender document. In case ISI marked materials or the materials mentioned in the tender document are not used due to non-availability, the materials used shall confirm to ISI code or CPWD specification applicable in this contract. In such cases the Engineer-in-charge shall satisfy himself about the quality of such materials and give his approval in writing. Only articles classified, as "First Quality" by the manufacturers shall be used unless otherwise specified. All materials not having ISI specifications. The Engineer-in-charge may relax the condition regarding testing if the quantity of materials requirement for the work is small.

For the products bearing ISI certification mark, no further testing is required at site. In all such cases of use of ISI certified materials, proper proof of procurement of materials from authentic manufacturers shall be provided by the contractor to the satisfaction of Engineer-in-charge.

e. The contractor shall obtain the approval of the Engineer-in-charge, of samples of all materials to be used in the work and shall deposit these samples with him before placing an order for the materials samples. Fresh samples shall be deposited with the Engineer-in-charge whenever the type of source of any materials changes.

f. The Engineer-in-charge shall have power to cause the contractor to purchase and use such materials from any particular source, as may, in his opinion, be necessary for the proper execution of the work.

g. The Copy of invoice for purchase of cement and steel shall be submitted to the Engineer-in-charge for every lot of cement / steel brought at site along with manufacturer's test certificate.

6. WATER SUPPLY : -

The Contractor shall make his own arrangement of suitable water for construction, his staff and workmen at his own cost or 1 % of gross value of work done shall be recovered if the water is used from the sources available within the premises of MMRCL. The water shall be tested from approved test house as per instruction of Engineer-in-charge. The testing charges for water will be borne by the Contractor.

7. POWER SUPPLY: -

The Contractor shall make his own arrangement of power for construction as well as for general lighting at his own cost and make necessary payments directly to the Department/ Authority concerned. The Contractor shall lay necessary wiring and arrange for main switch and meter at his own cost and remove, the same on completion / termination of the contract. The contractor shall also install and maintain at his own cost minimum one stand – by Diesel Generator sets of sufficient capacity to supply adequate electricity necessary for the construction work in case of power cut / break down.

8. PAYMENT : -

The payment due to the contractor shall be made within 28 days of the submission of the bill by the contractor and the measurements shall be verified by the Engineer-in-Charge or his representative within 10 days of submission of the bill subject to agency fulfilling other provisions of contract agreement conditions.

The bill shall not be entertained if the gross amount of the work done including secured advance payable is less than Rs. 20.00 Lakhs except Final Bill. The payment shall be made from the MMRCL office at BKC, Mumbai.

Running payment shall be made to Contractor once in a month or as per decision of Engineer-In-charge after deducting compensation for delay, other statutory deductions etc, for which the contractor may become liable.

9. INCOME TAX AND LABOUR CESS & GST :

Income Tax deductions shall be made from all payments made to the Contractor as per the rules and regulations in force in accordance with the Income Tax Act prevailing from time to time.

Labour cess as per rules and regulation in force shall be deducted from the bills of contractors and deposited with designated authority.

The quoted rate / percentage is exclusive of GST. However in case of GST, the same shall be paid to bidder for any taxable supply / service against a valid tax invoice. Agency should ensure that GST so paid by MMRCL is remitted to the appropriated Govt. Authorities on time and details of remittance should be submitted to Engineer-in Charge on demand.

10. MANAGEMENT OF CONTRACT LABOUR – DISBURSEMENT OF WAGES THROUGH BANK

The contractor shall open bank accounts in respect of each contractor labour, working at the work and deposit and disburse their wages through Bank either by cheque or crediting in the labour's account through ECS after obtaining authorization from the contract workers. Proof of same may be submitted to Engineer-in-charge or his representative every month.

11. CONTRACT AGREEMENT : -

The Contract agreement shall be executed on a non-judicial Stamp paper of the value of Rs. 500/- or as per prevailing practice by court of law and the cost of the Stamp paper shall be borne by the Contractor.

Contractor's tender including the letters of clarifications between the contractor and the MMRCL prior to the award of contract shall form a part of the contract agreement to the extent they have been accepted by MMRCL.

12. CONTRACTOR'S REPRESENTATIVES, AGENTS AND WORKMEN/ WORK WOMEN

a. The contractor shall employ only Indian Nationals and verify their antecedents and loyalty before employing them on the work. He shall ensure that no person of doubtful antecedents and nationality is in any way associated with the work.

b. The contractor shall, on request from the Engineer-in-Charge promptly cease to employ in connection with the contract and replace any person whose continued employment in connection there with is in the opinion of the Engineer-

in-charge undesirable. He shall not be re-employed in connection with the contract without the written permission of the Engineer-in-charge.

13. SITE ORGANISATION

Subject to the provisions in the tender document and without prejudice to contractors' liabilities and responsibilities to provide adequate qualified and skilled personnel on the work, Contractor shall deploy site organization and augment the same as decided by the Engineer-in-Charge depending on the exigencies of work. No engineering personnel deployed at site shall be removed from the site without prior approval of the Engineer-in-charge.

14. WATCH AND WARD & LIGHTING:

The contractor shall provide and maintain at his own expense all lights, fencing and watch & ward when and where necessary or required by the Engineer-in-Charge for the protection of the work or for safety and convenience of those employed on the work or the public.

15. DEPARTMENTAL REPRESENTATION:

The Engineer-in-Charge during his absence on the works shall be represented by one of his subordinates, whose duties in relation to the contractor shall be to ensure that work is performed in conformity with the plans and specifications in all respects. He shall communicate to the contractor the instructions and directions of the Engineer-in-Charge on all questions relating to the work, and the contractor shall comply with such instructions and directions. He shall request the contractor in writing to suspend the performance of any part of the work, if in his judgment the contractor is deviating from the plans and specifications, in spite of his instructions and contractor shall comply.

16. INSPECTION OF SITE AND TESTING : -

i)The Engineer-in-charge or his authorized representative shall have full power to inspect any portion of the work examine the materials and workmanship at the contractors work or at any other place from where the material is obtained. Acceptance of any material shall in no way relieve the contractor of his responsibility for meeting the requirement of the Specifications.

ii) Routine type tests for the various items of material shall be performed at the contractor’s works and test certificates furnished. The contractor shall permit

the Engineer-in-charge or his authorized representative to be present during any or all the tests. After notification to the Engineer-in-charge that the work has been completed, the contractor shall make under the direction and in the presence of Engineer-in-charge such tests and inspections as have been specified or as the Engineer-in-charge shall consider necessary to determine whether or not the full intent of requirements of the plans and specifications have been fulfilled. In case the work does not meet the full intent of the specifications, it shall be rectified by the contractor at no extra cost and the contractor shall bear all the expenses for any further tests considered necessary.

iii) All tools, instruments, plants and labour /operating personnel for the test shall be provided by the contractor at his own cost.

iv) The Engineer-in-Charge may at his discretion, check the test results if required, obtained either at regular site test or by independent tests at an approved laboratory. The cost of such material, transport, cost of testing etc. shall be borne by the contractor.

17. MATERIALS AT SITE : -

(a) Materials brought to the site by the contractor shall be stored by the contractor in a safe/dry storage space. The contractor shall be responsible for safe custody of materials at site till such time; the installation is commissioned and handed over to the Engineer-in-Charge.
(b)

18. STANDARD OF WORKMKANSHIP: -

To determine the acceptable standard of workmanship, the contractor shall execute portion of the item of work as sample for approval of the Engineer-in-charge, before taking up the actual execution of the particular item of work.

19. QUALITY CONTROL :

i) The Engineer-in-Charge or his authorized Representative shall satisfy himself about the brand name of approved make printed / pasted / engraved on the materials before use. The purchase voucher and Company's Test Certificate for each make to be used in the work shall be produced by the Contractor for verifications as and when directed by the Engineer-in-Charge. No separate laboratory test shall be required to be conducted for such materials. In case, for small magnitude of work, it is not feasible to obtain company's test certificate by

the Contractor the Engineer-in-Charge shall apply his judgment and discretion about the genuinity of the material.

ii) For works where brick cement, sand etc. shall be used the following fields test shall be carried out by the Contractor as and when directed by the Engineer-in-Charge.

a) Sieve analysis for grading of sand.
b)Test to determine bulking of sand.
c) Test to determine silt content for sand.
d) Sieve analysis for grading of coarse aggregate.
e) Slump test.
f) 7 days & 28 day's compressive strength test for concrete.
h) Test to determine dimensional tolerance of bricks.

iii) The Contractor shall provide at his expense all Testing equipment and other facilities which may be required for the purpose of carrying out the field tests mentioned above and no extra claim on this account shall be entertained by MMRC.

20. DEFECTS LIABILITY PERIOD :

The defects liability period shall be reckoned in the case of this work as 24 months for foothpath and 24 months or the remaining works from the certified date of completion of work and it shall be liability of the contractor to repair, strengthen or reconstruct at his own expense any portion of the work which has shown damages or any defect arising out of any bad workmanship or defective material being used for the work. In the case of rectification not being commended by the contractor within 7 days from the date of notice from the Engineer-in-charge, the Engineer-in-charge reserves the right to get the repair work executed at the risk and cost of the contractor.

21. The entire work shall be carried out as per latest Specifications as mentioned in the tender and MCGM/CPWD specifications all volumes with upto date correction slips upto the date of receipt of tender for civil works

22. However, in the event of any discrepancy in the description of any item as given in the schedule of quantities or particular specifications appended with the tender and the specifications relating to the relevant items as per MCGM/CPWD specifications mentioned above, the former shall prevail.

23. For the items not covered under MCGM/CPWD specifications mentioned above, the work shall be executed as per latest relevant standards / codes published by B.I.S. (Formerly ISI) inclusive of all amendments issued thereto revision thereof, if any, upto the date of receipt of tenders.

24. In case CPWD/B. I. S. (Formerly ISI) codes / specifications are not available; the decision of the Engineer-in-charge based on acceptable sound engineering practice and local usage shall be final and binding on the contractor.

25. The rates for different items of works shall be for all heights and depths of the building except where otherwise specified in the items of work or in special conditions appended with the tender.

26. Wherever any reference to any Indian Standard specification occurs in the documents relating to the contract the same shall be inclusive of all amendments issued thereto or revisions thereof if any, upto the date of receipt of tenders.

27. All materials to be used on works shall bear I. S. I. certification mark unless otherwise the make specified in the item or special conditions appended with tender document. In case ISI marked materials or the materials mentioned in the tender document are not used due to non-availability, the materials used shall confirm to ISI code or CPWD specification applicable in this contract. In such cases the Engineer-in-charge shall satisfy himself about the quality of such materials and give his approval in writing. Only articles classified, as “First Quality” by the manufacturers shall be used unless otherwise specified. All materials not having ISI specifications. The Engineer-in-charge may relax the condition regarding testing if the quantity of materials requirement the work is small.

For the products bearing ISI certification mark, no further testing is required at site. In all such cases of use of ISI certified materials, proper proof of procurement of materials from authentic manufacturers shall be provided by the contractor to the satisfaction of Engineer-in-charge.

28. Unless otherwise specified in the schedule of quantities the rates for all items of the work shall be considered as inclusive of pumping out of bailing out-water if required for which no extra payment will be made. This will include water encountered from any source such as rains, floods, subsoil, and water table being high due to any other cause whatsoever.

29. Any cement slurry added over base surface (or) for continuation of concreting for bond is added its cost in deemed to have in built in the item unless otherwise / explicitly stated and nothing extra shall be payable or extra cement considered with consumption of this account.

30. The rate for all items in which the use of cement is involved is inclusive of charges for curing.

31. The contractor shall take all precautions to avoid all accidents by exhibiting necessary caution boards day and night, speed limit boards, red flags, red lights and providing barriers. He shall be responsible for all damages and accidents caused due to negligence on his part. No hindrance shall be cause to traffic during the execution of the work. Nothing extra will be payable on this account.

32. The foundation trenches shall be kept free from water while all the works below ground level are in progress.

33. The contractor shall be responsible for the protection of sanitary and water supply fittings and other fittings and fixtures against pilferages and breakage during the period of installation and thereafter until the building is handed over.

34. The contractor shall maintain in perfect condition all works executed till the completion of the entire work allotted to him. Where phased delivery is contemplated the provisions mentioned above will apply to each phase.

35. No compensation shall be payable to the contractor for any damage caused by rains, epidemic disease, lightening, wind, storm, floods, earthquakes or other natural calamity during execution of work. He will make good all such damages at his own cost and no claim on this account will be entertained.

36. The contractor shall clear the site thoroughly of all scaffolding materials and rubbish etc. left out of his work and dress the site around the building to the satisfaction of the Engineer-in-charge before the work is considered as complete.

37. The contractor shall submit the purchase voucher of cement, steel bitumen, paints and other important materials procured for incorporation in the works to the Engineer – In – Charge.

38. Proper and elegant direction boards and “Work is in progress inconvenience caused is regretted” etc. should be displayed at appropriate places, as per the approval of Engineer-in-charge.

39. Samples of all the materials shall be got approved by the Engineer-in-charge before placing order for any materials.

40. Contractor shall keep adequate manpower and materials to take up any emergency works at site office every day including holidays.

41. ROYALTY OF MATERIALS

(i) “The contractor shall at his own expense, provide all materials required for the works other than those which are to be supplied by MMRCL. The contractor shall deposit royalty and obtain necessary permit for collection of stone, sand, red bajri, kankar, earth, manure etc. from the local authority in the matter and will abide by the notification issued by Central Govt. / State Government / Local State Authorities as applicable from time to time in this regard. The contractor is also bound to allow deduction from his bills any difference in statutory taxes / royalty and penalty proposed by Local State Authorities to MMRCL till finalization of settlement of all demands in this regard by Central / State Govt.”.(ii) This will also be applicable to forest produce.

42. BYE-LAWS

The contractor shall comply with all bye-laws and regulations of local and statutory authorities having jurisdiction over the works and shall be responsible for payment of all fees and other charges and for giving and receiving of all necessary notices and keeping the engineer-in-charge, informed of the said compliance with the bye-laws, payments made, notices issued and received.

The contractor shall indemnify the MMRCL against all claims in respect of patent rights, design, trademarks of name or other protected rights in respect of any plant, machine, work or materials used for or in connection with the work or temporary works and from and against all claims, demands proceedings, cost, charges and expenses whatsoever in respect of or in relation thereto. the

contractor shall defend all actions arising from such claims and shall himself pay all royalties license fees, damages, costs and charges of all and every sort that may be legally incurred in respect thereto.

43. The firm shall submit test certificates wherever applicable as per CPWD/ IS / Manufacturer's practice and the MMRC reserves the right to get them checked independently.

44. Approval of the Engineer-in-charge shall be taken well in advance for all materials to be used on work by the contractor.

45. APPARTITIONING OF WORK : -

The MMRCL reserves the right to apparition the work at different levels amongst not more than two contractors, by negotiations if necessary.

46. INSURANCE OF WORKS ETC :-

Without limiting its obligations and responsibilities under Clause 46 of Special Conditions of Contract the contractor shall insure against all losses or damages from whatever cause arising (other than the accepted risks) for which he is responsible under the terms of the contract and in such manner that the contractor are covered during the period of construction of works and also damage arising from a cause occurring prior to the commencement of the defects liability period any loss or damaged occasioned by the contractor in the course of any operations carried out by them for the purpose of complying with its obligations of defects clause hereof.

a) The work and the temporary works to the full value of such works executed from time to time.

b) The materials construction equipment and other things brought on to the site by the contractor to the full value of such materials, construction paint and other things. Also the insurance policies for the workers and staff shall be taken. Such insurance shall be effected with any subsidiary of the General Insurance company of India and the contractor shall whenever required, produce to the MMRCL the policy or the policies of insurance and the receipts for payment of the premiums.

47. DAMAGE TO PERSON AND PROPERTY : -

The Contractor shall indemnify and keep indemnified MMRCL against all losses and claims for injuries or damage to any person or any property whatsoever, which may arise out of or in consequence of the construction and maintenance of the works by them and against all claims, demands, and proceedings of or in relation thereof.

48. THIRD PARTY INSURANCE : -

Before commencing the execution of the works the contractor (But without limiting his obligations and responsibilities) shall insure against any damage – loss or injury which may occur to any property (including that of the Employer) or to any person, including any employer by or arising out of the execution of the works or temporary works or in carrying out of the contract.

49. MINIMUM AMOUNT OF THIRD PARTY INSURANCE : -

i) Such insurance shall be effected (with effect from date of start of work) with any subsidiary of the General Insurance Company of India and for atleast the minimum amount of Rs. 1 Lakh with unlimited number of occurrences. Whenever required the contractor shall produce to the MMRCL the policy or policies of Insurance and the receipts for payments of the premiums.

ii) If the Contractor could not effect a comprehensive insurance cover against risks which he may be required to effect under the terms of this clause, then he shall give his attention to get the best insurance cover available and even in case of effecting a wider insurance cover than the one which the subsidiary of the General Insurance Company could offer such an Insurance is ought to be done, by or through the subsidiary of the General Insurance Company.

50. Agency should submit the copies of purchase vouchers of materials, as desired by E-I-C, incorporated in the works**.**

51. RESTRICTED WORKING HOURS:

In case normal working hours are reduced due to operational / security requirement etc. no extra payment shall be admissible to the contractor but suitable extension of time shall be granted subject to verification of proper records of such restricted working hours maintained at site.

52. SITE CONDITIONS AND REQUIREMENTS

a) The contractor shall be responsible for the true and proper setting out of the work and for the correctness of the positions levels and dimension and alignments of all parts of the works and for the provisions of all necessary applications and labour in connections therewith.

b) If any times during the progress of the work any error may appear of arise in the position, levels, dimension or alignments of any part of the work the contractor on being required to do so by the Engineer-in-Charge shall at his own expense rectify such errors to the satisfaction of the Engineer-In-Charge.

c) The checking or any setting out of any line by the Engineer-in-Charge or his representative shall not relieve in any way the contractor of responsibility for the correctness thereof and shall carefully project and preserve all bench mark site rails, pegs and other things used in the set is out of work.

d) The contractor has to adjust his work and progress to work in co-ordination with other agencies working at site.

e) No crushing of aggregate will be allowed within MMRCL premises and its vicinity.

53. DIFFERENCE BETWEEN FIRST LOWEST BIDDER (L-1) AND SECOND LOWEST BIDDER (L-2).

Final bill will be worked out at the accepted agreement rates (L-1) and also with quoted rates of second lowest (L-2). The amount of final bill to be paid will be restricted to the lower of the two (L-1 and L-2),so that overall position of the lowest tenderer remains unchanged.

54. Purchase tax / Turnover tax / Octroi / Royalty / CESS / work contract tax or any other tax on work or on materials and labour in respect of this contract shall be payable by the contractor and Airports Authority of India will not entertain any claim whatsoever in this respect.

55. This notice of Tender shall form part of the contract document. The successful Tenderer / contractor, on acceptance of his Tender by the Accepting Authority, shall within 10 days from the stipulated date of start of work sign the contract consisting of Notice Inviting Tender, General Conditions of Contract, Special / Additional Condition, General and Particular Specification, Tender Conditions as issued at the time of invitation of Tender and acceptance thereof with any correspondence leading there to.

56. Tender Rates:

The rates quoted by Contractor shall be for finished and completed items and no extra amount for carting or transporting material, labour etc. shall be paid unless specifically so mentioned or provided for in the tender. The rates quoted must be inclusive of all leads and lifts for all materials in the completed items and also include Labour cess, all taxes, duties, royalties etc. but excluding GST etc. No payment on this account will be made. The Income Tax, Works Contract Tax, Labour cess, etc. shall be deducted at source at the rate that will be in force from time to time.

57. The successful Contractor will have to sign an agreement as required. The necessary stamp fees, etc. required for completing the agreement will have to be borne by the Contractor.

58. The contractor will keep the site office clean and hygienic throughout till work is completed in all respects.

59. The Contractor shall furnish all tools plants, instruments, supervisory staff, labour, materials, any temporary works, consumable and everything necessary whether or not such items are specifically stated herein, for completion of the job in accordance with the specification requirements.

60. The contractor shall familiarize himself with the site where he is expected to execute the work and quote his rates considering all the hurdles likely to face during execution.

61. The contractor whose tender is accepted will be required to produce to satisfaction of the Concerned Authority valid and current license issued in his favour under the provision of the contract labour (Regulations and abolition) Act 1970 and in case of failure to do so the acceptance of the tender would be liable to be withdrawn and earnest money forfeited.

62. Insurance :

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

a) Loss of or damage to the Works, Plant and Materials;

b) Loss of or damage to Equipment:

c) Loss of or damage of property (except the Works, Plant, Materials and Equipment) in connection with the Contract; and

d) Personal injury or death.

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.

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 plus 25% administrative

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

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

63. General Qualification: Applicants shall be an Indian company or sub company of the international company registered in India, incorporated under The Companies Act 2013.

CONSTRUCTION SPECIFICATIONS

These Specifications contained herein shall be read in conjunction with other Bid documents.

The Work shall be carried out in accordance with the "Good for Construction" drawings and as duly approved and stamped by the Employer. The Contractor shall not take cognizance of any drawings, designs, specifications, etc. not bearing the signature and stamp of the Employer. Similarly the Contractor shall not take cognizance of instructions given by any other Authority except the instructions given by the Employer in writing.

The specifications may have been divided into different sections / sub-heads for convenience only. They do not restrict any cross-references. The Contractor shall take into account inter-relations between various parts of works/trades. No claim shall be entertained on the basis of compartmental interpretations.

1.1 REFERENCE TO THE STANDARD CODES OF PRACTICE:

The Contractor shall make available at Site all relevant Codes of practice as applicable.

Legend:

PWD	Maharashtra Public Works Department
MCGM	Municipal Corporation of Greater Mumbai
CPWD	Central Public Works Department
IRS	Indian Railway Standards
IS	Indian Standards
MORT &H	Ministry of Road Transport and Highways
RDSO	Guidelines for Railway Embankments

1.2 QUALITY ASSURANCE:

(i) The work shall conform to high standards workmanship and aesthetically pleasing. The Contractor shall conform to the Quality standards prescribed, which shall form the backbone for the Quality Assurance system.

(ii) The Contractor shall arrange for the proper stacking/storage of the construction materials at Site to ensure the quality requirement. The Contractor shall provide all the necessary equipment and qualified manpower to test the quality of materials, assemblies, etc., as directed by the Employer. The tests shall be conducted at specified intervals and the results of tests properly documented. In addition the Contractor shall keep appropriate tools and equipment for checking alignments, levels, slopes and evenness of the surfaces.

a) The test shall be conducted at nominated Standard Laboratory selected by the Employer.

b) All testing shall be performed in the presence of Employer. Testing may be witnessed by the Contractor or his authorized representative if permitted by the Test House. Whether witnessed by the Contractor or not, the test results shall be binding on the Contractor.

(iii) The Employer shall have the right at all times to inspect all operations including the sources of materials, procurement, layout and storage of materials, all equipment and the quality control system. Such an inspection shall be arranged and the Employer's approval obtained prior to starting of the particular item of work. This shall however, not relieve the Contractor of his responsibilities. All materials which do not conform to these specifications shall be rejected and shall be removed from the Site immediately. The Employer shall have the powers to cause the Contractors to purchase and use materials from any particular source, as may in the Employer's opinion be necessary for the proper execution of work.

1.3 DIMENSIONS:

(i) Figured dimensions on drawings shall only be followed and drawings to a large scale shall take precedence over those to a smaller scale. Special dimensions or directions in the specifications shall supersede all others. All dimensions shall be checked prior to execution.

(ii) The levels, measurements and other information concerning the existing Site as shown on the drawings are believed to be correct, but the Contractor shall verify them for himself and also examine the nature of the ground as no claim or allowance whatsoever will be entertained on account of any errors or omissions in the levels or the description of the ground levels or strata turning out different from what was shown on the drawings.

1.4 SETTING OUT OF WORKS:

The Contractor shall provide suitable stones or steel plates with flat tops and build the same in concrete for temporary bench marks. All the pegs, control pillars for setting out the works and fixing the levels required for the execution shall be built in masonry as directed by the Employer. The Contractor shall protect and preserve all bench marks and control pillars till completion of assigned job. The Contractor shall submit overall survey report and layout of work and get it checked from Employer prior to commencement of work. The cost of all operations of setting out including construction of bench marks is deemed to be included in the quoted rates / Bill of Quantities.

(i) All the survey work except levelling work shall be carried out using total stations with minimum one second accuracy. The levelling work however, shall be carried out using Auto level.

(ii) The triangulations points given by the Employer before start of work shall be maintained during execution and handed back to the Employer after completion of work.

1.5 MATERIALS:

(i) Source of Materials:

It shall be the responsibility of the Contractor to procure all the materials required for the construction and work completion according to the contract. The Contractor shall indicate in writing the source of materials well in advance to the Employer, after the award of the work and before commencing the work. If the material from any source is found to be unacceptable at any time, it shall be rejected by the Employer and the Contractor shall forthwith remove the material immediately from the Site as directed by the Employer.

(ii) Quality:

All materials used in the works shall be new and of the best quality of their respective kinds as specified herein, obtained from sources and suppliers approved by the Employer and shall comply strictly with the tests prescribed hereafter, or where tests are not laid down in the specifications, with the requirements of the latest issues of the relevant Indian Standards.

(iii) Sampling and Testing:

All materials used in the works shall be subjected to inspection and testing in addition to manufacturer's test certificates. Samples of all materials proposed to be used in the permanent works shall be submitted to the Employer at least 28 days in advance for approval before they are brought to the Site.

Samples provided to the Employer for their retention are to be labeled and stored. Materials or workmanship not corresponding in character and quality with approved samples will be rejected by the Employer.

Samples required for approval and testing must be supplied sufficiently in advance for the fact that if the first sample is rejected further samples may be required. Delay to the works arising from the late submission of samples will not be acceptable as a reason for delay in completion of the works.

Materials shall also be tested on the Site and they may be rejected; if not found suitable in accordance with the specification, notwithstanding the results of quarry test certificates or any approval given earlier.

(iv) Dispatch of Materials:

Materials shall not be dispatched from the manufacturer's works to the Site without written approval from the Employer.

(v) Rejection:

Any materials that have not been found to conform to the specifications shall be rejected immediately and shall be removed from the Site by the Contractor at his own cost within two weeks or as instructed by the Employer.

1.6 STORAGE OF MATERIALS AT SITE:

All materials used in the works shall be stored on racks, supports, in bins, under cover, etc. as appropriate to prevent deterioration or damage from any cause whatsoever and to the entire satisfaction of the Employer.

The storage of materials shall be in accordance with IS 4082 “Recommendation on stacking and storage or construction materials on site” and as per IS 7969 “Safety code for handling and storage of building materials”.

The materials shall be stored in a proper manner at places at Site approved by the Employer. In case the place where material is stored by the Contractor is required by the Employer for any other purpose, the Contractor shall immediately remove the material from that place at his own cost and clear the place for the use of the Employer.

1.7 WATER:

(i) Water from approved source:

Potable water only shall be used for the works. The Contractor shall have his own source of water duly approved by Employer. The water shall be free from any deleterious matter in solution or in suspension and be obtained from an approved source. The quality of water shall conform to IS 456.

(ii) Storage:

The Contractor shall make his own arrangements for storing water, if necessary, in drums or tanks as approval by the Employer. Care shall be taken to see that water is not contaminated.

(iii) Testing:

Before starting any concreting work with new water source and wherever the source of water changes, the water shall be tested for its chemical and other impurities to ascertain its suitability for the use in concrete. No water shall be used until tested, and approved by the Employer. Cost of all such Tests shall be borne by the Contractor.

1.8 WORKMANSHIP:

a) All works shall be true to level, plumb and square and the corners, edges and arises in all cases shall be unbroken and neat.

b) Any work not to the satisfaction of the Employer or his representative will be rejected.

c) Rejected work shall be removed and replaced or rectified with work of the required standard of workmanship at the discretion of Employer at no extra cost.

1.9 STRUCTURAL WORK:

1.9.1 Unless specified, only controlled concrete with design mix and weigh batching shall be used for the work.

1.9.2 Minimum cement content specified in IS: 456-2000 specification is purely from durability point of view. Larger content of cement shall have to be provided if required by mix design.

1.9.3 Provision of cement slurry to create bond between plain / reinforced concrete surface and subsequent applied finishes shall not be paid extra.

1.9.4 Mix design using smaller aggregates of 10mm down shall also be done in advance for the use in the locations having congested reinforcement.

1.9.5 Procedure of mixing the admixtures shall be strictly as per the manufacturer's recommendation if not otherwise directed by the Employer.

1.9.6 All the water tanks and other liquid retaining concrete structures shall undergo hydraulic testing.

1.9.7 Special benches shall be provided at Site for stacking reinforcement bars of different sizes.

1.9.8 Formwork for beams of RCC areas shall be designed in such a way that the formwork of the adjacent structures can be removed without disturbing the props / supports of the beams.

1.9.9 Wherever there are tension / suspended concrete members which are suspended from upper level structural members, the shuttering / scaffolding of such members at lower level shall have to be kept in place till the time the upper level supporting members gain minimum required strength. Cost of such larger duration of keeping in place the shuttering/scaffolding shall be deemed to be included in the rates quoted for respective structural members.

1.9.10 Formwork is required for full height at all locations. Special precaution for such tall formwork shall be taken to ensure its safety. Extra costs for such formwork shall be deemed to have been included in the rates quoted against relevant items.

1.9.11 During the mobilization period, the Contractor shall carry out expeditiously and without delay the following works:

a) Material testing and mix designs of concrete as contemplated in the specifications.

b) Any other pre-requisite items required for final execution.

1.10 SUPPLY OF PROGRESS PHOTOGRAPHS AND ALBUMS:

The work covers the supply of color photographs and albums to serve as a permanent record of various stages/facets of work needed for an authentic documentation as approved by the Employer.

The photographs shall be of acceptable quality and they shall be taken by a professionally competent photographer with camera having the facility to record the date of the photographs taken in the prints and the negative. Each photograph in the album shall be suitably captioned and dated.

The photographs and materials including soft copy shall form a part of the records forthe Employer and prints of the same cannot be supplied to anybody else or published without the written permission of the Employer.

1.11 SURVEY WORK:

The said work involves at the very start of work taking-over of reference point from the Employer, establishment of control points, triangulation points, bench marks, grid layout for all the structures maintaining horizontal and vertical control within the permissible limits, incorporating changes (if any), submission of full data in the tabulation form and survey drawings during the progress of work.

1.12 BARRICADING:

The work covers barricading for the work/site areas provided/allotted for construction of various works/structures/ storage and other working area. Barricading shall be done by the Contractor at his own cost. The detailed scope of work is as follows:

a) Providing and installing the barricade as per the design and type as shown in the typical sketch furnished as per the approved plan to be installed firmly to the ground and maintaining it during the progress of work for the entire Contract period.

b) Lateral shifting of barricading if required for satisfactory execution of various works at Depot.

c) Dismantling of barricading and other temporary installations from the Site and cleaning the Site as per direction of Employer upon completion and acceptance of work.

1.13 SUB-CONTRACTOR / SPECIALIZED FIRMS:

Works as listed below and those dealing with proprietary materials/ products/equipment may be carried out by the Contractor through the Sub-Contractors / Specialized Firms as may be approved by the Employer in writing. The Sub-Contractors / Specialized Firms must be firms of repute and long standing, having adequate experience and have complete facilities to carry out all items of work required for completion as per Specifications and expected quality to the satisfaction of the Employer. Contractor shall obtain approval of Employer in advance prior to nominating their subcontracting, specialized firm for caring out works.

1.13.1 RESPONSIBILITY FOR SHOP DRAWINGS, SAMPLES AND MOCK-UPS:

Approval of shop drawings, samples and mock-ups for the various components shall not absolve the Contractor of his responsibility of completing the work to the specifications, standards, tests for performance and guarantees given in these documents and to a quality of finish as desired by the Employer.

1.13.2 CLEANING:

Surfaces on which finishes are to be provided shall be cleaned with water jets or oil free compressed air or power tools with wire brushes and detergents all as approved by the Employer.

1.14 APPLICABLE CODES, STANDARDS & PUBLICATIONS FOR EARTHWORK, STRUCTURAL & ARCHITECTURAL WORK:

The more important Codes, Standards and Publications to Contract are listed here under:

A	**General**
IS:2720 -	(Part-I to part-XXXII) –Method of test for soils
SP 7	National Building Code of India
SP 23 (S&T)	Hand Book on Concrete Mixes
B	**Bitumen**
IS:3384	Specification for bitumen primer for use in waterproofing and damp-proofing
C	**Building Construction Practices**
IS: 1838 Parts I and II.	Specifications for preformed fillers for expansion joint in concrete pavements and structures.
IS: 11134	Code of Practice for setting out of buildings.
IS: 11433	Parts I and II. Specifications for one part Gun grade poly-sulphide based joint sealant
D	**Cement**
IS: 455	Portland Slag Cement
IS: 650	Specification for standard sand for testing cement
IS: 1489 (Part 1)	Portland pozzolana cement: Fly ash based
IS: 6925	Methods of test for determination of water soluble chlorides in concrete admixtures.
IS: 8042	White Portland Cement
IS: 8112	Specification for 43 grade ordinary Portland cement
IS: 12269	Specification for 53 grade ordinary Portland cement
IS: 12328	Specification for sulphate resistant Portland cement
E	**Concrete**
IS:456	Code of practice for plain and reinforced concrete
IS:460 (Parts I to III)	Specification for Test Sieves
IS:516	Methods of test for strength of concrete
IS:1199	Methods of sampling & analysis of concrete
IS:1200	Method of measurement of building and civil engineering
IS:1607	Method of Test Sieving
IS:2386	Parts I-VIII. Methods of tests for aggregates for concrete
IS:2428	Methods of Sampling of Aggregates of Concrete
IS:2571	Code of practice for laying in-situ cement concrete flooring

IS:2645	Specifications for integral cement water proofing compounds
IS:2825	Methods of sampling and test (physical and chemical) for water & waste water
IS:3370	Code of practice for concrete structures for storage of liquids
IS:4326	Code of practice for earthquake resistant construction of building
IS: 6925.	Methods of test for determination of water soluble chlorides in concrete Admixtures
IS:7242	Specifications for concrete spreaders
IS:7251	Specifications for concrete finishers
IS:7861	Parts I & II. Code of practice for extreme weather concreting.
IS:7969	Safety code for handling and storage of building materials
IS:8142	Methods of test for determining setting time of concrete by penetration resistance
IS:9103	Specifications for admixtures for concrete
IS:9013	Method of making, curing and determining compressive strengths of accelerated cured concrete test specimens
IS:9284	Method of test for abrasion resistance of concrete
IS:10262	Recommended guidelines for concrete mix design
MORT&H	Specifications for Road and Bridge Works, Ministry of Road Transport and Highways (Roads Wing)
F	**Construction Plant and Machinery.**
IS:1791	Specification for batch type concrete mixers
IS:2505	General requirements for concrete vibrators: Immersion type.
IS:3558	Code of Practice for use of immersion vibrators for consolidating concrete.
IS:4656	Specifications for form vibrators for concrete.
IS:4925	Specification for concrete batching and mixing plant
G	**Formwork**
IS:4990	Specifications for plywood for concrete shuttering work.
IS:806	Code of practice for use of steel tubes in general building construction
IS:1161	Specification of steel tubes for structural purposes.
IS:1239	Specification for mild steel tubes, tubular and other wrought steel fittings.
H	**Handling and Storage**
IS:4082	Recommendation of Stacking and Storage of construction materials
IS:8759	Code of practice for maintenance and preservation of stones in building

I	**Instruments For Testing Cement and Concrete**
IS:5513	Specification for vicat apparatus.
IS:5514	Specification for apparatus used in Le-Chaterlier test
IS:5515	Specification for compaction factor apparatus.
IS:7320	Specification for concrete slump test apparatus
IS:7325	Specification for apparatus to determine constituents of fresh concrete.
IS:10080	Specification for vibration machine.
IS:10086	Specification for moulds for use in tests of cement and concrete
IS:10510	Specification for vee-bee consistometer.
J	**Paints and Coatings**
IS:102	Ready mixed paint, brushing, red lead, non-setting, priming
IS:109	Ready mixed paint, brushing, priming, plaster, to Indian Standard Colour No. 361 and 631 white and off white
IS:2074	Ready mixed paint, air drying, red oxide-zinc chrome, priming
BS:6496	Specification for powder organic coatings for application and stoving to aluminium alloy extrusions, sheet and preformed sections for external architectural purposes, and for the finish on aluminium alloy extrusions, sheet and preformed sections coated with powder organic coatings
BS:EN:10152	Specification for electrolytically zinc coated cold rolled steel flat products. Technical delivery conditions
K	**Pigment for Cement**
BS:1014	Specification for pigments for Portland cement and Portland cement products
L	**Reinforcement & Structural Steel**
IS:206	Code of Practice for use of Steel Tubes in General Building Construction
IS:432	Part I. Mild steel and medium tensile steel bars. Part II Hard drawn steel wire.
IS:806	Code of practice for use of steel tubes in general building construction
IS:815	Classification coding of covered electrodes for metal arc welding of structural steels
IS:1239	Specification for mild steel tubes, tubular and other wrought steel fittings
IS:1786	Specification for high strength deformed steel bars and wires for concrete reinforcement.
IS:2502	Code of Practice for bending and fixing of bars for concrete reinforcement
IS:5525	Recommendations for detailing of reinforcement in reinforced concrete works

IS:9417	Recommendations for welding cold-worked steel bars for reinforced concrete construction
IS:226	Structural steel (Standard Quality)
IS:800	Code of practice for use of structural steel in general building construction
IS:813	Scheme of symbols for welding.
IS:814	Covered electrodes for metal arc welding of structural steel. (Part I & Part II)
IS:816	Code of practice for use of metal arc welding for general construction in mild steel
IS:822	Code of practice for inspection of welds
IS:961	Structural steel (High Tensile)
IS:4923	Hollow steel sections for structural use
IS:6227	Code of practice for use of metal arc welding in tubular structure
M	**Sand**
IS:383	Coarse and fine aggregates from natural sources for concrete
N	**Scaffolding**
IS:2750	Specification for steel scaffoldings
IS:3696 (Part 1)	Safety Code of scaffolds and ladders: Scaffolds
IS:3696 (Part 2)	Safety Code of scaffolds and ladders: Ladders
IS:4014 (Part 1)	Code of practice for steel tubular scaffolding: Definition and materials
IS:4014 (Part 2) IRC:87	Code of practice for steel tubular scaffolding: Safety regulations for scaffolding Guidelines for the design and erection of false work for road bridges
O	**Sealants**
IS:10959	Glossary of terms for sealants for building purposes
IS:11433 (Part 1)	One part grade polysulphide base joint sealant: General requirements
IS:11433 (Part 2)	One part grade polysulphide base joint sealant: Methods of test
IS:12855	Methods of sampling and test for anaerobic adhesives and sealants
P	**Wood**
IS:283	Plywood for General Purposes
IS:848	Synthetic resin adhesives for plywood (phenolic and aminoplastic)
IS:1328	Veneered decorative plywood
IS:2202 (Part 1)	Wooden flush door shutters (solid core type): Plywood face panels
IS:2202 (Part 2)	Wooden flush door shutters (solid core (type): Particle face panels and hardboard face panels
Q	**All Indian Railway Standards**
R	**Metal**

IS:733	Wrought aluminium and aluminium alloy bars, rods and sections for general Employering purpose
IS:737	Specifications for wrought aluminium and aluminium alloy sheet and strip for general Employering purpose.
IS:3614 (Part 1)	Specification for fire check doors: Plate metal covered and rolling type
IS:3614 (Part 2)	Specification for metallic and non-metallic fire check doors: Resistance test and performance criteria
IS:7196	Hold Fasts
BS:4873	Specification for Aluminium alloy windows
BS:7352	Specification for strength and durability performance of metal hinges for side hanging applications and dimensional requirements for template drilled hinges

1. EARTHWORK

2.1 EARTHWORK FOR BUILDING FOUNDATIONS AND TRENCHES

2.3.1 *These specifications shall be read in conjunction with the PWD specifications with upto date correction slips and other relevant specifications.*

2.3.2 *Results of the Geotechnical Investigations conducted at the Project Site are enclosed with the Bid document. Also the details of the earthwork completed by the earthwork Contractor will be made available by the Employer in due course. This information about the soil and sub-soil water conditions is being made available to the Contractor in good faith and the Contractor is advised to obtain details independently as may be considered necessary by him before quoting rates in the tender.*

2.3.3 The Contractor shall make provision for all shoring, dewatering, dredging, bailing out or draining water whether subsoil or rain or other water and the excavation shall be kept free of water while the masonry work or concrete work is in progress and until the Employer considers the work well set (Refer IS: 3764 Safety Code for Excavation Work). The sides of trenches shall be kept vertical and the bottom horizontal and shall be run level throughout or properly stepped as directed by the Employer.

2.3.4 Dewatering shall be carried out by suitable means with adequate stand-by arrangements as may be approved by the Employer. The Contractor shall be deemed to have satisfied himself with regard to feasibility of all aspects of dewatering including site constraints due to existing structures. Though the method of dewatering is left to the Contractor, he shall be required to submit method statement of dewatering scheme including requisite justifications to the Employer and seek his prior written approval. Approval of the Employer however shall not relieve the Contractor of the responsibility of adequacy and appropriateness of dewatering and protection arrangements for the quality and safety of the work. The Contractor shall satisfy the Employer as to the capacity of the drains or disposal site to take the required quantity and flow of water to be pumped out at various stages of excavation. The Contractor shall obtain necessary approvals of local bodies for discharging the pumped out water.

2.3.5 Trenches and foundation pits or any other excavation work shall be fenced, provided with proper caution signs and marked with red lights, reflectors at night to avoid accidents.

2.3.6 Excavation material required for filling shall be stacked or dumped where indicated by the Employer. Excavated material not required for filling and any surplus material shall be removed from Site as directed by the Employer. Dumping of this surplus material shall be in an orderly environmental friendly manner using tarpaulin cover, dumper, placer etc. and according to the levels/grades as indicated by the Employer. The cost of such removal and spreading shall be borne by the Contractor and deemed to be included in the Contract Rates. The excavated material belong to the Contractor. Dumping the material as per prevailing bye laws is his responsibility. Necessary approval from the local authorities for carting and dumping surplus material is to be obtained by the Contractor.

2.3.7 The Contractor shall notify to the Employer when the excavation is completed and no base or concrete or masonry shall be laid until the Employer has inspected and approved the soil conditions obtained for each individual footing or the full raft area.

2.3.8 The Contractor shall ensure the stability of the excavation so that the surrounding ground and all adjoining structures and plants will be safe against settlement, subsidence and damage and that there is no risk of injury to personnel.

2.3.9 In case any underground structures that need to be protected (like underground sewer lines, water pipe lines,etc.) are encountered, the Contractor shall immediately bring the same to the notice of the Employer and shall take all such steps as the Employer may instruct for protection of such structures. Such protective measures shall be done at the Contractor's cost. If any damage occur to such items which were required to be protected during execution, the same shall be made good by Contractor at his own cost otherwise client will arrange to make it good at the risk and cost of Contractor.

2.3.10 In the foundation the backfilling shall be done in layers not more than 200mm thick and shall be thoroughly watered and consolidated by approved method.

2.3.11 In case sand is used for backfilling in foundation and plinth, it shall be got approved by the Employer. In the foundation the backfilling shall be done in layers not more than 200mm thick and shall be thoroughly watered and consolidated by approved method. The rate for backfilling using sand in foundation is deemed to have been included in the excavation rate.

3. CONCRETE: PLAIN & REINFORCED

These specifications shall be read in conjunction with the MORT&H Specifications and other relevant specifications described in the Section 1.1 of these Specifications.

3.1 MATERIALS

Before bringing to the Site, all materials for concrete shall be approved by the Employer. All approved samples shall be deposited in the office of the Employer before placing orders for the materials with suppliers. The materials brought on to the works shall conform in every respect to their approved samples.
Fresh samples shall be deposited with Employer whenever type or source of any material changes. The Contractor shall check the fresh consignment of materials as it is brought on to the works to ensure that they conform to the specifications and/or approved samples.

Contractor shall also ensure that all constituents of exposed concrete shall be taken from same sources to achieve a uniform colour and texture.

3.1.1 Cement

3.1.1.1 The cement used shall be of the following types:

a) 43 grade Ordinary Portland Cement conforming to IS: 8112.
b) 53 grade Ordinary Portland Cement conforming to IS:12269.
c) Portland Slag Cement conforming to IS:455.
d) Portland Pozzolana Cement conforming to IS:1489 (Part-1 & Part-2).

3.1.1.2 Whenever possible all cements of each type shall be obtained from one constant source throughout the Contract. Cement of different types shall not be mixed together. Different brands of cement, or the same brand of cement from different sources, shall not be used without prior approval of the Employer.

3.1.1.3 The Contractor may obtain cement in bulk and store it in suitable silos of adequate capacity. Each type of cement shall be stored in a separate silo and it shall be ensured, that cements of different quality are not mixed up.

3.1.1.4 All cement shall be fresh when delivered and at ambient atmospheric temperature.

3.1.1.5 In fair faced elements, the cement used in the concrete for any complete element shall be from a single consignment. All cement for exposed concrete shall be from the same approved source and uniform in colour.

3.1.1.6 With each and every delivery of cement the Contractor shall provide manufacturers certificate that the cement conforms to the relevant Indian standard. The Contractor shall provide complete facilities at Site for carrying out the following tests :

a) Setting time by vicat's apparatus as per IS: 4031 and IS: 5513.
b) Compressive strength on cement as per IS: 4031, IS: 650, IS: 10080.

3.1.1.7 Total chloride content in cement shall in no case exceed 0.05 percent by mass of cement. Also, total sulphur content calculated as sulphuric anhydride (SO_3), shall in no case exceed 2.5 percent and 3.0 percent when tri-calcium aluminate per cent by mass is upto 5 or greater than 5 respectively.

3.1.2 Aggregate

Aggregates from natural sources shall be in accordance with IS: 383. The Contractor shall submit to the Employer certificates of grading and compliance for all consignments of aggregate. In addition to tests conducted at Site from time to time, the Contractor shall allow for carrying out such tests from eternal laboratory and supply test records to the Employer as directed. The aggregates shall be procured from approved sources only as directed by the Employer from time to time.

For fair faced concrete, the Contractor shall ensure that aggregates are free from iron pyrites and impurities, which may cause discoloration. Aggregates shall be stored on paved areas in different compartments according to their nominal size.

3.1.3 Fine Aggregate

The Contractor shall provide complete facilities at Site for determining grading of aggregates by sieves as per IS: 383, IS: 460, IS: 1607, and IS: 2386.

It shall be free from clay, loam, earth or vegetable matter, salt or other harmful chemical impurities. It shall be clean, sharp, strong, angular and composed of hard siliceous material. Crushed sand as required by the design Mixfrom the approved source shall be allowed. The grading of fine aggregate when determined as described in IS: 2386 (part I), shall be within the grading zones I, II, III. The Contractor shall provide complete facilities at Site for carrying out the following tests:

a) Proportion of clay, silt and fine dust by sedimentation method as per IS: 2386 part II.
b) Moisture content in fine aggregate as per IS: 2386 Part III.
c) Bulk density/ Bulkage.

3.1.4 Coarse Aggregate

The coarse aggregate shall be crushed stone, crushed gravel, natural gravel or a suitable combination thereof. Coarse aggregate obtained from crushed or broken stone shall be angular, hard, strong, dense, durable, clean and free from soft, friable, thin plate, elongated or flaky pieces and any deleterious material.

River gravel or pit gravel shall be sound, hard, clean, non-porous, suitably graded in size with or without broken fragments and free from flat particles of shale, clay, silt, loam, and other impurities. Except where it can be shown to the satisfaction of the Employer that a supply of properly graded aggregate of uniform quality can be maintained over the said period of the works, the grading of aggregate shall be controlled by obtaining the coarse aggregate in different sizes and blending them

in correct proportions as and when required. All coarse aggregate shall conform to IS: 383 and tests for conformity shall be carried out as per IS: 2386, Parts I to VIII. The maximum size of coarse aggregate shall be such that the concrete can be placed without difficulty so as to surround all reinforcement thoroughly and fill the corners of formwork. Unless otherwise permitted by the Employer the nominal maximum size shall not exceed 20 mm.

3.1.4.1 Water

3.1.4.1.1 Water used in the works shall be potable water and free from deleterious materials. Water used for mixing and curing concrete as well as for cooling and/or washing aggregate shall be fresh and clean free from injurious amounts of oil, salts, acids, alkali, other chemicals and organic matter.

Water shall be from the source approved by the Employer and shall be in accordance with clause 5.4 of IS: 456 However, chloride content in water shall not exceed 500 mg/litre.

Before starting any concreting work and wherever the source of water changes, the water shall be tested for its chemical and other impurities to ascertain its suitability for use in concrete for approval of the Employer. No water shall be used until tested and found satisfactory. Cost of all such Tests shall be borne by the Contractor.

3.2 BLENDING OF AGGREGATES:

In order to obtain optimum workability, individual aggregates of nominal size 20mm, 10mm, 4.75mm and 2.36mm will be blended in such a way that the grading curve for all aggregates will be a smooth curve from size 0.15mm to 25mm falling within the established envelop grading curve. Contractor shall establish envelop grading curve for each grade of concrete for given maximum size of aggregates and get it approved by Employer before finalising the mix design.

3.3 ADMIXTURES:

a) Chemical admixtures are not to be used until permitted by the Employer. In case their use is permitted, the type, amount and method of use of any admixtures proposed by the Contractor shall be submitted to the Employer for approval. The minimum cement content specified shall not be reduced on account of the use of the Admixtures.

b) The Contractor shall further provide the following information concerning each admixture to the Employer

   i. Normal dosage and detrimental effects if any of under dosage and over dosage.

   ii. The chemical names of the main ingredients in the admixtures.

   iii. The chloride content, if any, expressed as a percentage by weight of admixture.

iv. Whether or not the admixture leads to the entrainment of air when used in the manufacturer's recommended dosage.

v. Where two or more admixtures are proposed to be used in any one mix, the manufacturer's written confirmation of their compatibility.

c) In reinforced concrete, the chloride content of any admixture used shall not exceed 0.2 percent by weight of the admixture as determined in accordance with IS:6925 and the total chloride and sulphate contents in concrete mix shall not exceed 0.15 and 4.0 percent respectively by weight of cement.

d) The admixtures when used shall conform to IS: 9103. The suitability of all admixtures shall be verified by trial mixes.

e) The addition of calcium chloride to concrete containing embedded metal will not be permitted under any circumstances.

f) Retarding admixtures when used shall be based on ligno-sulphonates with due consideration to clause 5.2 and 5.3 of IS: 7861.

3.4 BATCHING PLANTS, MIXERS AND VIBRATORS:

a) Unless specified in the schedule of items, for all structural concreting work the Contractor shall provide automatic weigh-batching plant of suitable capacity. The plant used shall conform to IS: 4925.

b) The Contractor shall provide Concrete mixers (IS: 1791 – Batch type concrete mixers, IS: 2438 – Roller Pan Mixer) and Vibrators (IS: 2505 – Concrete Vibrators Immersion Type, IS: 2506 – Screed board concrete vibrators, IS: 4656 – Form Vibrators for Concrete) supplied by recognised manufacturers.

3.5 MIX DESIGN:

It is the complete responsibility of the Contractor to design the concrete mixes by approved standard methods and to produce the required concrete conforming to the specifications and the strength, workability requirements approved by the Employer. Mix design once approved must not be altered without prior approval of Employer. However, shall the Contractor anticipate any change in quality of future supply of materials than that used for preliminary mix design, he shall inform the Employer quite in advance and bring fresh samples sufficiently in advance, to carry out fresh trial mixes. Design mix will indicate by means of graphs and curves etc., the extent of variation in the grading of aggregates which can be allowed.

The mix design must incorporate all the provisions of durability reports (meant for 100 years design life of structure), prepared by the Contractor's durability expert and approved by the Employer before concrete mix design.

Limits of Water and Cement Contents

Maximum water/cement ratio shall be as per IS456.

Protection of Concrete against aggressive Environment

Concrete structures below or up 1 meter above ground shall be designed to withstand sulfate and chemical attack. The Contractor shall carry out routine tests

of ground water and soil for presence of sulfates and substances aggressive towards concrete. Concrete Mix shall be proportioned with the considerations to these tests.
The design as shown in the contract drawings requires that all concrete below ground level shall be formed from ordinary Portland cement blended with either pulverized fly ash or ground granulated blast furnace slag. In addition, such concrete shall be completely encapsulated in a sheet applied of bituminous waterproofing membrane / coal tar epoxy. The use of sulfate resisting cement shall not be permitted.

Cement Content
Cement content in concrete shall not be less than as specified in IS 456- 2000 for RCC work under severe exposure. Ordinary Portland cement (OPC) of 43 and 53 grade conforming to IS: 8112 and IS: 12269 respectively, as well Portland slag cement conforming to IS:455 and Portland Pozzolana cement conforming to IS: 1489 (Part – 1 & Part – 2) shall be used, so as to suit the sub-soil water condition.

Minimum Provision for durability requirements:
Minimum cement content in all RCC structures shall be as per the durability requirements specified in IS456. PFA shall be within maximum limit of 35% by weight of the total cementitious material in the mix.

3.6 ADDITIONAL TESTS FOR CONCRETE:

As frequently as the Employer may require, additional testing shall be carried out for concreting in addition to mandatory test specified in PWD specifications, relevant IS Code, MORT&H Specifications.

3.7 BATCHING OF CONCRETE INGREDIENTS:

Unless permitted by the Employer, all concreting shall be either produced in automatic weigh batching plant installed at Site or Ready Mix Concrete manufactured in automatic weigh batching plant.

3.8 PLACING TEMPERATURES:

During extreme hot or cold weather, the concreting shall be done as per procedures set out in IS: 7861, Parts I & II.

in hot weather with temperature exceeding 40 degree C, the stock piles of fine and coarse aggregates for concreting shall be kept shaded from direct rays of sun and the concrete aggregates sprinkled with water for a sufficient time before concreting in order to ensure that the temperature of these ingredients is as low as possible prior to batching. The mixer and batching equipment shall be also shaded and if necessary painted white in order to keep their temperatures as low as possible. The placing temperature of concrete shall be as low as possible in warm weather and care shall be taken to protect freshly placed concrete from overheating by sunlight in the first few hours of its laying. The time of day selected for concreting shall also

be chosen so as to minimise placing temperatures. In case of concreting in exceptionally hot weather the Employer may in his discretion specify the use of ice either flaked and used directly in the mix or blocks used for chilling the mixing water to keep the desirable temperature of water below 7 degree centigrade. In either case, the Contractor shall not be paid extra for cost of ice, additional labour involved in weighing and mixing etc. All salt and saw dust shall be removed from ice before use. Quality of water used for making ice shall confirm to IS: 456.

3.9 TRANSPORTING, PLACING, COMPACTING AND CURING:

Transporting, placing, compacting and curing of concrete shall be in accordance with IS: 456.

Transporting:

The mix after discharging from the mixer shall be transported by transit mixers, buckets, pumps etc. or as approved by the Employer without causing segregation and loss of cement slurry and without altering its desired properties with regard to water cement ratio, slump, air content, cohesion and homogeneity. It shall be ensured that the concrete is moved to its final destination before it attains an initial set.

The transportation is to be done by agitating transit mixers, pumps or other approved methods.

Placing:

The method of placing shall be such as to prevent segregation by providing windows in the formwork for pouring concrete or by Tremie pipe. The thickness of each horizontal layers shall not exceed 280mm. High velocity discharge of concrete causing segregation of mix shall be avoided. The concrete shall be placed in the forms gently and not dropped from a height exceeding 1.5m except in columns where the maximum height allowed will be 2.0m. Each layer of concrete shall be compacted fully before the succeeding layer is placed and separate batches shall follow each other so closely that the succeeding layer shall be placed and fully compacted before initial setting of the layer immediately below. Concreting of any portion or section of the work shall be carried out in one continuous operation and no interruption to concreting work shall be allowed without approval of the Employer.

Before starting of work Contractor will get the concrete pouring program and its sequence approved by Employer to avoid cold joints.

Compaction:

Internal (needle) and surface (screed board) vibrators of approved make shall be used for compaction of concrete.

Internal vibrators shall be used for compaction of concrete in foundations, columns, buttresses arch section, slabs, etc., and if required surface vibrators shall also be used. Depending on the thickness of layer to be compacted, 25 mm, 40 mm, 60 mm and 75 mm dia internal vibrators will be used. The concrete shall be compacted by use of appropriate diameter vibrator by holding the vibrator in position until:

Air bubbles cease to come to surface.

Resumption of steady frequency of vibrator after the initial short period of drop in the frequency, when the vibrator is first inserted.

The tone of the vibrated concrete becomes uniform.

Flattened, glistening surface, with coarse aggregates particles blended into it appears on the surface.

Use of curing compounds may be permitted with specific approval of Employer.

After the compaction is completed, the vibrator shall be withdrawn slowly from the concrete so that concrete can flow in to the space previously occupied by the vibrator. To avoid segregation during vibration the vibrator shall not be dragged through the concrete nor used to spread the concrete. The vibrator shall be made to penetrate, into the layer of fresh concrete below if any for a depth of about 150mm. The vibrator shall be made to operate at a regular pattern of spacing. The effective radii of action will overlap approximately half a radius to ensure complete compaction.

To secure even and dense surfaces free from aggregate pockets, vibration shall be supplemented by tamping or rodding by hand in the corners of forms and along the form surfaces while the concrete is plastic.

A sufficient number of spare vibrators shall be kept readily accessible to the place of deposition of concrete to assure adequate vibration in case of breakdown of those in use.

Form vibrators whenever used shall be clamped to the sides of formwork and shall not be fixed more than 450 mm above the base of the new formwork and concrete shall be filled not higher than 228mm above the vibrator. The formwork must be made specially strong and watertight where this type of vibrator is used.

Care must be taken to guard against over vibration especially where the workability of the concrete mix is high since this will encourage segregation of the concrete.

Plain concrete in foundations shall be placed in direct contact with the bottom of the excavation, the concrete being deposited in such a manner as not to be mixed with the earth. Plain concrete also shall be vibrated to achieve full compaction.

Concrete placed below the ground shall be protected from falling earth during and after placing. Concrete placed in ground containing deleterious substances shall be kept free from contact with such ground and with water draining there from during placing and for a period of seven days or as otherwise instructed thereafter. Approved means shall be taken to protect immature concrete from damage by debris, excessive loading, abrasion, vibrations, deleterious ground water, mixing with earth or other materials, and other influences that may impair the strength and durability of the concrete.

Curing:

Curing of concrete shall be complete and continuous using potable water free from chlorides and sulphates water that is free of harmful amounts of deleterious materials that may attach, stain or discolor the concrete as per IS 456. Minimum wet curing will be for seven days by ponding water followed by moist curing by spraying water which shall be maintained up to a total period for at least 21 days from the date of casting.

Immediately after compaction and completion of any surface finishes the concrete shall be protected from the evaporation of moisture by means of polythene sheathing, wet Hessian or other material kept soaked by spraying. As soon as the concrete has attained a degree of hardening sufficient to withstand surface damage moist curing shall be implemented and maintained for a period of at least 15 days after casting.

Method of curing and their duration shall be such that the concrete will have satisfactory durability and strength and members will suffer a minimum distortion, be free from excessive efflorescence and will not cause undue cracking in the works by shrinkage.

Steam curing with approved methodology can be adopted if required, for precast segments. No extra payment will be made for adopting steam curing.

Curing compounds may be permitted with Employer's approval. However it is required to be proved that using curing compound the concrete shall not have less strength than concrete cured by water curing. It shall not leave any discolouration on the structural concrete.

3.10 CONSTRUCTION JOINTS:

Construction Joints in concrete structure shall be done as per the design requirements. No separate payment shall be allowed to the Contractor for forming joints or chipping and cleaning them. If use of metal, rubber or plastic water stops is specified, this shall be cast into joints. Measures shall be taken by the Contractor to ensure that no displacement or distortion of water stops takes place during placing of concrete. The construction joints shall ensure proper bond and leak proof joint.

3.11 CRACKS:

If cracks develop in concrete construction, which in the opinion of the Employer may be detrimental to the strength of the construction, the Contractor at his own expense shall test the slab or other construction as directed by the Employer. If under such test, the cracks develop further, the Contractor shall dismantle the construction, carry away the debris, replace the construction and carry out all consequential work thereto.

External crack width shall be checked in accordance with latest IRS provisions for all structure. If cracks width is more than what is specified in the latest IRS

provisions or in the opinion of Employer may be detrimental to concrete construction, the Contractor at his own expenses shall test the structure.

3.12 DEFECTIVE CONCRETE:

Shall any concrete be found honeycombed or in any way defective, such concrete shall be cut out partially or wholly by the Contractor and made good at his own expense. If Employer feels that repaired structure will not be having same strength or shape or uniformity with other exposed surface as original desired structure / original structure, the same shall be rejected by Employer and required to be dismantled and disposed by Contractor at his own cost as instructed by Employer. Decision of the Employer shall be final and binding in this regard.

3.13 EXPOSED FACES, HOLES AND FIXTURES:

On no account shall concrete surfaces be patched or covered up or damaged concrete rectified or replaced until the Employer or his representative has inspected the works and issued written instructions for rectification. Failure to observe this procedure will render that portion of the works liable to rejection.

Holes for foundation or other bolts or for any other purposes shall be moulded, and steel angles, holdfasts or other fixtures shall be embedded, according to the drawing or as instructed by the Employer.

3.14 OTHER APPLICABLE CODES OF PRACTICE FOR IN-SITU REINFORCED CONSTRUCTION :

All other requirements not covered by the above clause shall be governed by relevant clauses of IS 456, IS 3370, IS 2571 and other relevant standards as may be applicable.

3.15 PRECAST CONCRETE:

The provision in this section shall be considered supplementary to general provisions for reinforced concrete works.

Handling and Storage:

The precast units shall be stored as directed by the Employer. The area intended for the storage of precast units shall be surfaced in such a way that no unequal settlement can occur.

To prevent deformation of slender units, they shall be provided with supports at fairly close intervals and shall also be safeguarded against tilting. Lifting and handling positions shall conform to the Employer's directions and drawings. In addition, location and orientation marks shall be put on the members, as and where necessary. During erection the precast units shall be protected against damage caused by local crushing and chafing effects of lifting and transport equipment.

Temporary Supports and Connections:

Temporary supports provided during erection shall take into account all construction loads likely to be encountered during the completion of joints between

any combination of precast and in-situ concrete structural elements. The supports shall be arranged in a manner that will permit the proper finishing and curing of any in-situ concreting and grouting associated with the precast member being supported when the gaps of joints have to be filled with concrete or mortar. They shall first be cleaned and faces of the joints shall be wetted. The mixing, placing and compacting of cement and mortar shall be done with special care. Mortar of a dry consistency shall be in the proportion of 1:1½ (1 part of cement to 1½ parts of sand) and shall be placed in stages and packed hard from both sides of the joint.

Tolerances:

The following tolerances apply to finished precast products at the time of placement in the structure. The forms must be constructed to give a casting tolerance within these limits:

a) Overall dimensions of members shall not vary more than ± 6mm per 3m length with a maximum variation of ± 20mm.

b) Cross-sectional dimensions shall not vary more than the following:

c) ± 3mm for sections less than 150mm thick

d) ± 4mm for sections over 150mm & less than 450mm

e) ± 6mm for sections over 450mm to 1000mm

f) ± 10mm for sections over 1000mm

g) Deviation from straight line in long sections shall not be more than + 6mm up to 3m, + 10mm for 3m to 6m, + 12mm for 6m to 12m.

3.16 TESTING CONCRETE STRUCTURES FOR WATER TIGHTNESS & ACCEPTANCE CRITERIA

Not Used

3.17 ADMIXTURES:

Use of Melamine or Naphtha based approved admixtures is a must. They shall be permitted by the Employer provided that the strength and durability requirements are not affected by their use. The admixture will not be paid for separately. Depending on concrete or sequence, retarding super plasticizer shall be used without any extra cost.

3.18 CONCRETING OF SUBSTRUCTURE AND SUPERSTRUCTURES

3.18.1 Construction and concreting of substructure and superstructure shall conform to the requirements laid down in MORT&H (latest revision) and IS-456-2000 and the requirements specified hereunder.

3.18.2 Grade of Controlled Concrete

The grades of concrete, maximum size of aggregates, Minimum and maximum cement content per m3 of concrete, max water cement ratio and slump shall be as specified in Section 1700 of MORT&H Specification (latest revision).

NOTE: For controlled concrete works, if the Contractor is unable to obtain the required concrete strength, with the above given maximum dosage of cement, he can with the specific approval of Employer increase the cement dosage.

In Such cases no extra payment will be made for the use of extra cement. Use of approved plasticiser super plasticiser for increase in workability only at Contractor's cost is mandatory. Lignosulphonate based Admixtures / plasticizers will not be permitted.

3.18.3 Requirements of Consistency

The mix shall have the consistency which will allow proper placement and consolidation in the required position. Every attempt shall be made to obtain uniform consistency.

The slump of concrete shall be as per IS: 516.

Higher degree of workability / additional slump where required may be permitted by the Employer on request of the Contractor and shall be obtain by adding required quantity of approved plasticizer at no extra cost.

3.18.4 Additional Requirements

As per Clause 1704.4 of MORT&H Standard Specifications, concrete shall meet with any other requirements as specified on the drawing or as directed by the Employer. Additional requirements shall also consist of the following overall limits of deleterious substances in concrete:

a) The total chloride content of all constituents of concrete as a percentage of mass of cement in mix shall be limited to values given below:

-Reinforced concrete exposed to chlorides in service (e.g. structures located near sea coast) : 0.2%

- Other reinforced concrete construction : 0.3%

b) The total sulphuric anhydride (SO3) content of all the constituents of concrete as a percentage of mass of cement in the mix shall be limited to 4%.

3.18.5 Setting up of field laboratory by Contractor (Not Used)

3.19 KEEPING RECORD

Contractor shall maintain records in approved format as specified by the Employer at site of work containing the following details/information.

a) Daily receipt of cement and use of cement in various items;

b) Time of starting of concrete work and closure;

c) Testing of cubes and results;

4. FORM WORK

4.1. The particular specifications are to be read in conjunction with the specifications contained in the description of items contained in "Standard Specifications" published by Buildings and Communications Department of Maharashtra, relevant Indian Standard Specifications. In case of conflicting provisions in various documents , the provisions in Particular Specifications shall take precedence over any other documents.

4.2. MATERIALS:

Formwork shall be of timber, plywood (including marine plywood), steel or any other suitable material capable of resisting damage to the contact faces under normal conditions of erecting forms, fixing steel and placing concrete. The selection of materials suitable for formwork shall be made by the Contractor based on the quality consistent with the specified finishes and safety. For designated areas prominently in public view, only steel shuttering shall be used. Special finishes like grooves, logos, floral designs, engraving in inset and outset shall be provided by fixing monolithic rubber forms fixed on entire surface of the formwork. The minimum shore hardness of rubber shall be A-55 to ensure strength, flexibility & elasticity. The contours, design and edges of rubber form shall be smooth to ensure minimal deposition of grime or dust. The material shall be approved by the Employer before erected at Site. However, the entire responsibility of planning, designing, erection, dismantling, shifting and safety of false work lies with the Contractor.

All formwork and formwork supports (centering, props, scaffolds etc.) shall only be in structural steel and preferably of pipes conforming to IS:806, IS:1161, IS:1239, IS:2750. Wooden ballies shall not be permitted as props/formwork supports. All props shall be properly braced using x & k bracings.

The form for piers shall be provided such that concreting of piers from 0.5m below ground upto pier-cap bottom shall be done for full height in one pour without any construction joint. Formwork shall be designed accordingly.

Timber:

Timber used for formwork shall be easily workable with nails without splitting. It shall be stable and not liable to warp when exposed to sun and rain or wetted during concreting.

Plywood:

Plywood used for formwork shall be minimum 12 mm thick. Shuttering quality plywood complying with IS: 4990 and of make approved by the Employer. Suitable stiffeners and walers shall be provided depending on the shuttering design.

Steel:

Steel formwork shall be made of minimum 4 mm thick black sheets stiffened with angle iron frame made out of M.S. angles 40mmx 40 mm x 6 mm supported at suitable spacing.

4.3. MOCK-UP

After design and before incorporation in the works, the efficacy of the desired finish has to be demonstrated/confirmed by casting the mock as directed by the Employer.

4.4. FORMWORK FOR EXPOSED CONCRETE SURFACES:

The facing formwork, unless indicated otherwise on drawings, or specifically approved by the Employer in writing, shall generally be made with materials not less than the thickness mentioned below for different elements of the structure:

a) Plain slab soffit and sides of beams, girders, joists and ribs and side of walls, fins, parapets, pardis, sun-breakers, etc. shall be made with:

i. Steel plates not less than 4mm thick of specified sizes stiffened with a suitable structural framework, fabricated true to plane

ii. Timber planks of 20mm actual thickness and of specified surface finish, width and reasonable length,

iii. Plywood not less than 12mm thick (IS:4990 - Specification for Plywood for Concrete Shuttering Work) or 3mm thick plywood with a 20mm timber plank backing, of specified sizes stiffened with a suitable timber framework. At joints 6mm/10mm sponge to be provided.

b) Bottoms of beams, girders and ribs, sides of columns shall be made with:

i. Steel plates not less than 5mm thick of specified sizes stiffened with a suitable structural framework, fabricated true to plane

ii. Timber planks of 35mm actual thickness and of specified surface finish, width and reasonable length,

iii. Plywood plates not less than 12mm thick, of specified sizes stiffened with a suitable timber framework.

4.5. ERECTION OF FORMWORK:

The following shall apply to all formwork:

a) The Contractor shall obtain the approval of the Employer for the design of forms and the type of material used before fabricating the forms. (Ref. ACI 347 Formwork for Concrete or equivalent I.S. Code).

b) Vertical props shall be supported on wedges or other measures shall be taken where the props can be gently lowered vertically during removal of the formwork. Props for an upper level shall be placed directly over those in the level immediately below, and the lowest props shall bear on a sufficiently strong area. Care shall be taken that all formwork is set plumb and true to line and level or camber or better where required and as specified by the Employer.

c) If the formwork is held together by bolts, these shall be so fixed that no iron will be exposed on surfaces against which concrete is to be laid. In any case wires shall not be used with exposed concrete formwork. The Employer may at his discretion allow the Contractor to use tie-bolts running through the

concrete and the Contractor shall decide the location and size of such tie-bolts in consultation with the Employer. Holes left in the concrete by these tie-bolts shall be filled as specified by the Employer at no extra cost. These tie-bolts are not to be provided in structures with exposed surfaces.

d) Provision shall be made in the shuttering for beams, columns, and walls for a port hole of convenient size so that all extraneous materials that may be collected could be removed just prior to concreting.

e) Formwork shall be so arranged as to permit removal of forms without jarring the concrete. Wedges, clamps and bolts shall be used wherever practicable instead of nails.

The formwork for beams and slabs shall be so erected so that forms on the sides of the beams and the soffit of slabs can be removed without disturbing the beam bottoms or props under beams.

f) Surfaces of forms in contact with concrete shall be oiled with a mould oil of approved quality, form releasing agent or clean diesel oil. If required by the Employer the Contractor shall execute different parts of the work with different mould oils to enable the Employer to select the most suitable. The use of oil which results in blemishes on the surface of the concrete shall not be allowed. Oil shall be applied before reinforcement has been placed and care shall be taken that no oil comes in contact with the reinforcement while it is being placed in position. The formwork shall be kept thoroughly wet during concreting and the whole time that is left in place. Nothing extra shall be paid to Contractor for oiling.

g) Immediately before concreting is commenced, the formwork shall be carefully examined to ensure the following:

i. Removal of all dirt, shavings, sawdust and other refuse by brushing and washing.

ii. The tightness of joints between panels of sheathing and between these and any hardened core.

iii. The correct location of tie bars, bracing and spacers, and especially connections of bracing.

iv. That all wedges are secured and firm in position.

v. That provision is made for traffic on formwork not to bear directly on reinforcing steel.

h) The Contractor shall obtain the Employer's approval for dimensional accuracies of the work and for the general arrangement of propping and bracing. (IS: 3696 - Safety Code of Scaffolds and Ladders, IS: 4014 Steel Tubular Scaffolding I & II). All scaffolding and staging shall be either of steel tubes or built up section of rolled steel with adequate bracing at several levels in each perpendicular direction connecting each prop. In addition to this diagonal bracing shall be provided in elevation ideally at 45 degrees or between 28 and 60 degree. The Contractor shall be entirely responsible for the adequacy of propping, and for keeping the wedges and other locking arrangements undisturbed through the decentering period. (IS: 8989 Safety code for erection of concrete framed structures)

i) Formwork shall be continuously watched during the process of concreting. If during concreting any weakness develops and formwork shows any distress the work shall be stopped and remedial action as directed by the Employer shall be taken.

4.6. CONCRETE FINISHES:

This section deals with the surface of concrete on which forms had been fixed while concreting.

Allowable deviation from plumb or level and from the alignment profile, grades and dimensions shown on the drawings is defined as "tolerance" and is to be distinguished from irregularities in finishes as described herein. Tolerances in concrete construction are specified elsewhere.

The classes of finish and requirements for finishing of concrete surface shall be as shown on the drawings or as hereinafter specified. In the event of finishing not being definitely specified herein or in the drawings, finishes to be adopted shall be as directed by the Employer.

4.7. AGE OF CONCRETE AT REMOVAL OF FORMWORK:

Age of Concrete at Removal of Formworks shall be in accordance with IS: 456. The Employer may vary the periods specified if he considers it necessary. Immediately after the forms are removed, they shall be cleaned with a jet of water and a soft brush.

4.8. STRIPPING OF FORMWORK:

The work of form work removal shall be planned and a definite scheme of operation worked out. Formwork shall be removed carefully without jarring the concrete, and curing of the concrete shall be commenced immediately. Concrete surfaces to be exposed shall, where required by the Employer, be rubbed down with Carborundum stone or bush-hammer to obtain a smooth and even finish. Where the concrete requires plastering or other finish later the concrete surface shall be immediately hacked lightly all over as directed by the Employer. No extra charge will be allowed to the Contractor for such work on concrete surfaces after removal of forms.

4.9. FORMWORK FOR PRECAST CONCRETE:

a) The provisions in this section shall be considered supplementary to the general provisions stated above. Precast concrete members and panels shall be made in accurately constructed moulds, on a properly prepared casting bed. All aspects of the making, curing and erection of precast units shall be subject to the approval of the Employer.

The Contractor shall submit detailed drawings of formwork for the approval of the Employer. Finishing with cement mortar shall not be allowed.

b) The formwork shall be of sturdy construction with special considerations to shutter vibrators when used. All edges and joints of the formwork shall be

designed and sealed so that no cement grout can escape and there is no wedging or keying to the concrete. The effect of curing on the formwork shall be given special consideration. Depending on care, curing erection and maintenance after stripping, the number of uses can be made as per satisfaction of Employer for different types of formworks like plywood with timber backed formwork and / or Steel moulds.

Stripping: As soon as the precast units have attained sufficient strength, the formwork shall be stripped. The precast unit shall be lifted uniformly out of the formwork without being subjected to tilting or restraint effects.

5. REINFORCEMENT

5.1. The particular specifications are to be read in conjunction with the specification contained in “Standard Specifications” published by Buildings and Communications Department of Maharashtra, relevant Indian Standard Specifications. In case of conflicting provisions in various documents , the provisions in Particular Specifications shall take precedence over any other documents.

Any steel specified for reinforcement shall conform in every respect to the latest relevant Indian Standard Specifications and shall be of tested quality under the ISI Certification Scheme.

All reinforcement work shall be executed in conformity with the drawings supplied and instructions given by the Employer and shall generally be carried out in accordance with the relevant Indian Standard Specifications IS: 2502- Bending and Fixing of Bars for Concrete Reinforcement.

The reinforcement steel shall be Corrosion Resistant Steel (CRS), Fe 500 from primary producers (SAIL, TISCO or equivalent as approved by the Employer) and no re-rolled steel shall be allowed to use in work.

5.1.1. Mechanical couplers of threaded type with enlargement at connection by cold forging may be used at appropriate locations after prior approval of Employer.

5.2. INSPECTION & TESTING:

Every bar shall be inspected before assembling on the works and any defective, brittle, excessively rusted or burnt bars shall be removed. Cracked ends of bars shall be cut out.

Manufacturer's Certificate shall be supplied for each lot of supply.

Specimens sufficient for three Tensile Tests for each different size of bar for each consignment delivered, or for 10 tonnes of supply of that size, whichever is less shall be sampled and tested by the Contractor. Batches shall be rejected if the average results of each batch are not in accordance with the specifications.

5.3. BAR BENDING AND BAR BENDING SCHEDULE:

All bars will be carefully and accurately bent by approved means in accordance with IS: 2502, and relevant drawings. It shall be ensured that depth of crank is correct as per the bar cutting and bending schedule and bent bars are not straightened for use in any manner that will injure the material.

Prior to starting bar bending work, the Contractor shall prepare bar bending schedule from the structural drawings supplied to him and get the same approved by Employer. Any discrepancies and inaccuracies found by the Contractor in the drawings shall be immediately reported to the Employer whose interpretation and decision there to, shall be accepted.

5.4. LAPPING

All lapping shall be as per provision in Code or as specified in the design drawing.

6. STRUCTURAL STEEL WORKS

6.1. STRUCTURAL STEELWORK SPECIFICATIONS- GENERAL

6.1.1. Scope of Specification

These specifications shall be read in conjunction with the PWD specifications, MORT&H Specifications and other relevant reference specifications described in the section 1.1 of these specifications.

6.1.2. Products

6.1.2.1. **Materials**

a) All materials to be supplied by the Contractor shall conform to relevant Indian Standards or equivalent, as approved by the Employer.

(16) Steel materials required for the work shall be free from imperfections, mill scales, slag intrusions, laminations, pittings, rusts etc. that may impair strength, durability and appearance. All materials shall be of tested quality only. If desired by the Employer test Certificates in respect of each consignment shall be submitted in triplicate. Whenever the materials are permitted for procurement from identified stocks, a random sample shall be tested at an approved laboratory, as directed by the Employer.

Steel from SAIL/TATA/JSW shall be used for the works.

6.1.2.2. **Structural Steel**

All structural steel shall be of tested quality and shall conform to one of the following standards:

IS: 226	Structural steel (Standard Quality)
IS: 2062	Grade –B Structural steel (Fusion welding quality)
IS: 961	High Tensile Structural Steel (Ordinary)
IS: 1161	Steel Tubes for Structural purposes
IS: 8500 –	Grade Fe 540HT

The Contractor shall supply to the Employer copies of the manufacturer certificate that the steel brought to the Site for incorporation in the works is of a quality fully complying with the specification. If required by the Employer, the Contractor shall arrange for testing of the steel samples as per IS: 1608 - 1599.

a) **STRUCTURAL STEEL SPECIFICATIONS -PAINTING WORKS**

6.1.3. General

6.1.3.1. **Scope of Specification**

This Specification covers the scope of painting, methods for the surface preparation, application of paints and precautions to be taken for the painting of structural steel work. It covers the supply and delivery of all necessary materials, labour, scaffolding tools, equipment and everything that is necessary for the job completion on schedule.

6.1.3.2. **Applicable Codes**

6.1.3.3. The following Specifications, Standards and Codes are included as part of this Specification. All standards and codes of practice referred to herein shall be the current editions during the currency of project including all applicable official amendments and revisions.

In case of discrepancy between this Specification and those referred to herein, this specification shall govern. In case of discrepancy between Contract drawings and this specification, the Contract drawings shall govern.

a) IS: 102 (1962) : Ready Mixed Paint, Brushing, Red lead, Non Setting, Priming.

b) IS: 159 (1981) : Ready Mixed Paint, Brushing, Acid Resisting for Protection against Acid Fumes, Colour as Required.

c) IS: 341 (1973) : Black Japan, Types A, B & C.

d) IS: 384 (1979) : Brushes, Paints and Varnishes, Flat.

e) IS: 487 (1985) : Brush, Paint and Varnish i) Oval Ferrule Bound ii) Round Ferrule Bound.

f) IS: 958 (1975) : Temporary Corrosion Preventive Grease, Soft Film, Cold Application.

g) IS: 1153 (1975): Temporary Corrosion Preventive, Fluid, Hard Film, Solvent Deposited.

h) IS: 1477 (1971): Code of Practice for Painting of Ferrous Metals in Building. Part I -Pretreatment Part II –Painting

i) IS: 1674 (1960): Temporary Corrosion Preventive Fluid, Soft Film, Solvent Deposited.

j) IS: 2074 (1992): Ready Mixed Paints, Red Oxide -Zinc Chrome, Priming.

6.1.4. Execution

6.1.4.1 **Surface preparation; Iron and steelwork**

a) Bare iron and steelwork including sheeting and pipes shall be thoroughly prepared by removing all dirt, rust and loose mill scale to the entire satisfaction of the Employer.

b) Preparation shall include the use of chipping hammers, scrapers, power tools with mechanical wire brushes and Carborundum grinding discs. The use of mechanical chisels and other impact tools may exceptionally be ordered if in the opinion of the Employer their use is necessary.

c) All rivets, welds, angles, joints and openings shall be properly cleaned.

d) All tools shall be operated in such a manner that no sharp ridges or burrs are left and no cuts made in the steel.

e) Dust and other loose material shall be removed after cleaning. Oil and grease shall be removed with white spirit.

f) The priming coat shall be applied before any contamination or rusting occurs.

g) All surfaces shall be washed with mineral spirits to remove any dirt or grease before applying paint. Where rust or scale is present, it shall be wire brushed and cleaned with emery paper.

h) Steelwork shall be given one shop coat of primer before delivery to Site. In case this gets damaged in transit the damaged areas shall be cleaned off, wire brushed, and spot primed immediately after delivery. A second coat of primer shall be applied at Site after erection.

6.1.4.2 **General**

All brushes, paint rollers, spraying equipment, kettles etc., used in carrying out the work shall be clean and dry. They shall be thoroughly re-cleaned before being used for a different type or class of material. Cutting in shall be neatly and accurately performed.

No painting shall be done during inclement weather conditions, in dusty atmosphere or when it is raining or when the temperature is less than 10°C or when the humidity is high. Sequence shall be properly planned such that finished work is not spoiled by subsequent preparatory works.

Flood coat shall be provided for preservatives. Successive coats of undercoat shall have different tints.

Paint shall be applied only to properly prepared, clean, sound and dry surfaces. Each coat of paint shall be thoroughly dry before the next coat is applied and the surfaces of primers and undercoats shall be lightly rubbed down and dusted off.

Coats of paint shall be applied at proper intervals to secure maximum adhesion. Where two hard gloss finishing coats are scheduled, the second coat shall be applied within 48 hours. The method of application by brush, roller or spray shall be decided by the Employer.

Precautions:

a) Old brushes, if they are to be used with emulsion paints, shall be completely dried of turpentine or oil paints by washing in warm soap water. Brushes shall be quickly washed in water immediately after use and kept immersed in water in break periods to prevent the paint from hardening on the brush.

b) In the preparation of surfaces for plastic emulsion painting, no oil base putties shall be used in filling cracks, holes, etc.

c) Splashes on floors etc. shall be cleaned out without delay and definitely every day, as they will be difficult to remove after hardening.

d) Washing of surfaces treated with emulsion paints shall not be done within 3 to 4 weeks of application.

Preparation of paint:

Mixing:

a) All liquid paints shall be thoroughly stirred using mechanical stirrers with a minimum speed of 650rpm to a uniform consistency when containers are opened and before being transferred to paint kettles.

b) Paste paints shall be beaten up thoroughly as directed by the manufacturer prior to thinning.

Thinning:

a) Thinning for oil paints shall not normally be permitted. In exceptional circumstances, the Employer may permit thinning with up to 5% of white spirit by volume or a thinner as recommended by the paint manufacturer to maintain the paint in a working consistency.

b) PVA emulsion paints shall be thinned with potable water for the first coat only depending on the porosity of the surface to be painted. In any case, the quantity of water shall not exceed 50% by volume. Subsequent coats shall not be thinned.

Straining:

a) Any paint showing bittiness in application shall be strained through fine gauze.

b) Addition of other materials:

With the exception of the thinners given in (b) above, no other materials shall be added to the paints.

c) Mixing of different paints together:

Mixing of different paints together shall not be permitted.

6.1.4.3 **Protection**

All ironmongery, finger plates, power points, lighting fixtures, grills, diffusers, fixtures of other services, machinery, plant and equipment, flooring, glazing etc. shall be protected using PVC sheets weighing 1000g/sqm and masking tapes. Flooring, wherever laid, even though it may not have been polished shall be protected likewise.

Masking tapes shall be used.

Covering for protection shall be left in position upto completion, to the satisfaction of the Employer.

6.1.4.4 **Method of Application**

Brush painting

Paint shall be applied so that the finished surface is free from brush marks. All areas or parts shall be laid off correctly. All paint edges shall be good, sharp and true to line.

Primers :

Priming coats shall be applied by brush to give a coat of adequate thickness with no misses and to satisfy the porosity of the surface. The priming shall be well worked into the surface, joints, angles and other places where moisture is likely to collect.

Steelwork surfaces shall be primed immediately after cleaning. Priming coats applied off-site that have suffered from exposure on the Site or in transit shall be touched up or re-primed as necessary before undercoating.

Where there is a doubt as to the adequacy of the primer to fully satisfy the porosity of the surface, the Employer shall be informed and his directions taken.

7 FOOTPATH WORKS

Footpaths shall be constructed either by Stamped Concrete or Concrete Paver Blocks as indicated in the approved Drawing/ Description of Item in the BOQ or as instructed by the Employer.

TECHNICAL SPECIFICATION FOR TYPE XI RETRO REFLECTIVE SHEETING AS PER IRC 67 – 2012.

The retro reflective sheeting used shall conform to Type-XI standards as per IRC 67- 2012 & ASTM D4956- 09 and shall meet minimum expectable coefficient of retro reflection values as mentioned in table 6.9 of IRC 67 – 2012.

Test Criteria:-

As per clause 6.7 of IRC 67-2012, the retro reflective sheeting shall be tested for coefficient for retro reflection, day time colour and luminance, shrinkage, flexibility, liner removal, adhesion, impact resistance, secular gloss & fungus resistance, three years outdoor weathering and its having passed this test shall be obtained from international/Govt laboratory/Institute by the manufacturer of the sheeting. A certified copy of the test report having the test done for the above mentioned parameters shall be submitted along with the bid. The report shall be attested by the retro reflective sheeting manufacturer, the performance reading after three years must beat least 80% of the minimum values mentioned in ASTM D 4956-09 Type XI sheeting performance table. Also, test report from an independent test laboratory from India for the sheeting having tested for retro reflection and colorometry shall be submitted by the renderer.

Periodic reflective testing: The bidder shall produce a declaration from the OEM that reflectivity of sign boards shall be tested in a periodic interval of 2 years at free of cost till the end of warranty period and prove to the government authority that the reflectivity of the retro reflective sheeting is still more that the specified minimum values of coefficient of reflectivity as specified in IRC 67 2012.

OEM supplying road furniture (RPM/Median Marker) shall have their own facility of government approved R&D laboratory of their own registered in India.

All retro reflective sheeting shall be tested as per clause 6.7 of IRC 67-2012 in government approved laboratory or ARAI pune / CRRI Delhi. Contractor shall also submit lot certificate from the retro reflective sheeting manufacturer for the supplied lot.

GENERAL:

1. Directional boards combined with /without Traffic sign board shall be fully assembledset consisting of all accessories /materials as per specifications and

as specified in the accompanying sketch at pg.184-197.

2. All the material should be free from any manufacturing defects.

1. The colour,size etc.of all directional boards board signage /traffic signs shall be as specified in the drawing /specifications and in the absence or any missing details, the signage shall be provided as directed by Engineer-In-Charge.
2. Orientation of Directional board: Directional board shall be placed as directed by Engineer-In- Charge.
3. Prequalification warrantee for 10 years for Type-XI from the manufacturer of retro reflective sheeting as per clause 6.9 of IRC-67 - 2012 shall be submitted by thebidder during the bid submission.
4. A certified copy of test reports from an independent test laboratory confirming to clause 6.4 of IRC 67-2012 including 3 years outdoor weather exposure reports forthe retro reflective sheeting offered attested by the retro reflective sheeting manufacturer & shall be submitted by the bidder during the bid submission. Also a third party test report fromIndia for retro reflection and colorometry of retro reflective sheeting shall be submitted by the bidder.
5. A current dated authorized convertor certificate shall be submitted by the bidders whichshall be attested by the sheeting manufacturer for this specific tender.
6. All the signages shall be digitally printed as per the specification.

A] STRUCTURAL SPECIFICATION:

The various structural materials required for the fabrication of Directional baords shall be conforming to the following requirements.

1. Galvanised Mild steel sections:

Structural mild steel sections should be as per relevant IS specifications.Other mild steelsections should be as per IS 4923 or other relevant IS specifications.Sections should be in one piece without any joints. All mild steel sections shall be hot dip galvanized with agalvanization thick ness of 85 microns.

All rolled mild steel structural component of the direction board of make SAIL/Tata/ Jindal shall confirming to relevant to IS 1161 of 1998.

Steel plates,support sections:

Steel plates,support sections required for the fabrication of Directional baords shouldbe of Galvanised Mild steel conforming to IS 226 and ARE 2062 or any other relevant IS specification.

Aluminium Composite Materials (ACM)

ACM sheets used for sign boards is a sandwiched construction with a thermoplastic core of 'Low Density Polyethylene' (LDPE) between two thick skins/sheets of aluminium with overall thickness of 4 mm and 3 mm, and aluminium skin thickness of aluminium skin shall conform to the requirement given as per Table 6.1 of IRC 67-2012, when tested in accordance with the test methods mentioned against each of them.

Shoulder mounted ground signs with a maximum side dimension not exceeding 600mmshall not be less than 1.5mm thick with aluminium and 3mm thick with aluminium composite material. All other signs shall be at least 2mm thick with aluminium and 4mm thick with aluminium composite material. The thickness of the sheet shall be related to the size of the sign and its support and shall be such that it does not bend or deform under prevailing wind and other loads. All overhead signs made with aluminium composite material shall be minimum 4mm thick to withstand wind and other loads without deformation.

2. Bolts, Nuts, Washers :

High strength bolts should conform to IS 1367 , whereas precision bolts, nuts etc. should be conform to IS 1364. The botls and nuts should be of stainless steel.

3. Reinforcement steel :

Reinforcement steel conform to the requirements of IS 1786 unless otherwise shown on drawing.

4. Concrete :

Concrete should be of the M40

5. Foundation for the pole :

foundation for the pole should be made by making excavation in all type of strata to the size and levels as shown in the sketch at pg.88 and fixed with cement concrete of grade M40 during installation . The damage portion of the footpath and lining work with paver block should make good without claiming 'Extra'.

6. Rusti-cide treatement to the M.S. structural sections :

All mild steel structural members should be treated with Rusti -cide treatement of approved manufacturer and should be applied by manufacturer or its authorized applicator. Treatement should be applied as per manufacturer's specification and certificate to that effect shall be submitted by applicator /tenderer along with guarantee certificate for three years in original by applicator/ tenderer addressed toDy. Ch. Eng. (Traffic).

7. Painting to the M.S . Structural assembly :

All mild steel structural assembly should be painted with two coats of anti rust paint and two coats of polyurethane paint of the colour as specified.

B] SIGNAGE SPECIFICATION :

General requirements for Retro Reflective sheeting:

(I) Warranty& Durability:

As per clause 6.9 of IRC 67 – 2012, both the screen printed area, cut out sheeting and cutout durable transparent overlay film shall be covered under the 10 year warrantee issued by the sheeting manufacturer. As per clause 6.7.4.3 at the end often years , the sheeting shall retail at least 80% of its original retro reflection.
Hence, the bidder shall also submit pre qualification warrantee for 10 years field performance attested by the sheeting manufacturer for technical qualification in the tender.

(II) Periodical Testing:-

Authority shall be testing coefficient of retro reflection of the installed sign boards in a periodical basis of two years. Sign board shall perform above/meet minimum coefficient of retro reflection at all angles as per table 6.9 of IRC 67-2012 failing which contractor shall be liable to replace installed by them as mentioned in the tender BOQ. Also, the performance security shall be withheld. Charges for the periodical shall be borne by the contractor.

(III) Sign placement:-

All the road sign shall be placed on the road as mentioned in the IRC 67- 2012.

The Tenderer shall obtain from the manufacturer a Ten (10) years pre-qualification warranty (Format is available in the office of the Dy.Ch.Eng.(Traffic)) for satisfactory field performance including stipulated retro-reflectance of the Retro-reflective sheeting of Type XI standards conforming to IRC 67-2012 Code and submitted the same along with filled up tender form. In addition, a Ten (10) years warranty forsatisfactory in field performance of the finished sign with retro-reflective sheeting of TYPE XI standards conforming to IRC 67-2012 code inclusive of the screen printed or cut out letters

/legends and their bonding to the retro-reflective sheeting shall be obtained from the contractor

/supplier /applicator and passed on to the Dy.Ch.Eng.(Traffic). The contractor

/supplier /applicator shall also furnish a certification that the signs and materials supplied against the assigned work meets all the stipulated requirements and carry the stipulated warranty. The warranty shall also cover the replacement obligation by the sheeting manufacturer as well as contractor for replacement /repairing /restoration of the retro- reflective efficiency.

A lot certificate in original from the manufacturer of retro-reflective sheeting stating that the material lot quantity being supplied under purchase order conforms to the standard specified for retro-reflective sheeting and is the part of original warranty.

Warranty should be given in original and should have legal jurisdiction in India. Warranties given by power of attorney holders will not be acceptable. The retro-reflective sheet shall be weather resistant and following, cleaning, shall show no appreciable discoloration, cracking, blistering or dimensional changes.

(IV)Adhesives:

The sheeting shall either have a pressure-sensitive adhesive of the aggressivetack type requiring no heat, solvent or other preparation for adhesion to a smooth clean surface, or a tack free adhesive activated by heat, applied in a heat- vaccume applicator,in a manner recommended by the sheeting manufacturer. The adhesive shall form a durable bond to smooth, corrosion and weather resistant surface of the base plate such that it shall not be possible to remove the sheeting from the sign base in one pieceby use of sharp instrument. In case of pressure- sensitive adhesive sheeting, the sheeting shall be applied in accordance with the manufacturer's specification. Sheetingwith adhesive requiring use of solvents or other preparation for adhesive shall be applied in accordance with the manufacturer's instructions.

(V) Fabrication:

Surface to be reflected shall be effectively prepared to receive the retro reflective sheeting. The aluminum sheeting shall be de-greased either by acid or hot alkaline etching and scale /dust removed to obtain a smooth plain surface before application of retro-reflective sheeting. If the surface is rough, approved surface primer may be used. After cleaning, metal should not be handled except by suitable device or clean canvas gloves between all cleaning and preparation operation and application of retro-reflective sheeting /primer. There shall be no opportunity for metal to come in contact with grease, oil, or other contaminants prior to the application of retro-reflective sheeting.

Complete sheets of the material shall be used on the signs where it is unavoidable. At splices sheeting with pressure-sensitive adhesives shall be overlapped not less than 5 mm or butted with a gap not exceeding 0.75 mm. Where

screen printing with transparent colours is proposed, only butt joining shall be used. The material shall cover the sign surface evenly and shall be free from twists, cracks and folds. Cut-outs to produce borders and legends shall be bonded with sheeting in the manner specified bythe manufacturer.

SPECIAL DIRECTIONS TO THE TENDERERS APPLICABLE FOR THE WORK OF FABRICATING PROVIDING AND FIXING DIRECTIONAL BOARDS.

a. Tenderer(s) are required to quote for Fabricating, Providing and fixing Directional baords including pole, fixtures and other accessories as per specifications on a regular contract basis.
b. The specifications and sketch of Directional board are appended with the tender documents. The successful tenderer will have to strictly comply with these specifications.
c. Directional baords will be required to be fabricated, provided and fixed by the tenderer for the entire contract period. Any defect, damage etc. caused during transportation or while fixing on site etc. shall be immediately attended to byrectifyingreplacing the damaged items as directed by site-in-charge.
d. The tenderer shall submit the structural stability certificate for the directional board from the licensed structural engineer/ Govt institution.
e. The tendere shall quote the rate as per bill of quantities and rate attached.
f. The tenderer / contractor shall be bounded by 'General Instructions and General conditions Of Contract' for civil works effective from 1.4.2000 and amendments upto date.
g. The tenderer / contractor may please be note that,if Directional baords are not as per the specification or there is any lapse in providing & fixing the Directional baords, theMunicipal corporation shall reserve the right to get the work through other agency atthe risk and cost of the tenderer / contractor.
h. Tenderer / contractor should note that the payment due to them will be made by ECS in their bank Accounts. They will have to furnish their Bank Account No. on receipt of Tender Acceptance Letter or Work Order.
i. The Directional boards should be fabricated, provided & fixed as per work order issued by Executive Engineer (Traffic & *Co-ordination* / Traffic Planning).
j. In no case fabrication of any sort will be allowed at work site.
k. It is contractor's responsibility to provide proper security arrangement at work site as well as at fabrication yard. In case of any theft of material, M.C.G.M. willnotbe responsible.
l. Escalation Clause will not be applicable for the said contract.
m. In case of missing/theft of signage's boards / damaged direction boards due to accidents during defect liability period shall be replaced / repaired by

contractors as directed by the Engineer, However no payment shall be made for refixing of signagesboards.

n. The cleaning of signage's boards shall be maintained to have clarity & reflectivity by washing with requisite solvants at regular interval & monthly report of thesame shall be made to Executive Engineer (Traffic Planning) failing which penalty of Rs. 10000/- per month shall be imposed.

SPECIFICATIONS AND SPECIAL CONDITIONS FOR TENDERERS OF THERMOPLASTIC ROAD MARKING:

MATERIAL:

o. All marking should be strictly in accordance with code of practice for road marking paints, with IRC-35 and as specified by the engineer in charge.

p. The Thermoplastic paint material shall be homogeneous /composed of aggregate, pigment, resins and glass reflector zing beads and shall conform to BS- 3262.

q.

r. Thermoplast Marking paints used should be strictly of three makes i.e Asian paints, Berger's paints and Nerolac paints.

s. Original purchase invoices from authorised dealers along with dealer's dealership certificate shall be submitted without which no payment will be made by MCGM.

t.

General:

u. The colour of the compound shall be white or yellow as specified in the IRC or as directed by the Engineer.

v. 2. Requirements :-

w. 1. Composition - The material shall be free from all skins, dirt and foreign objects and shall comply with requirements indicated below as per ASTMD-36/MORTH/BS 3262 :-

x. PERCENTAGE BY WEIGHT:

y.

Sr. No	Component	White
1	Binder	20% +/- 2%
1	Glass beads	20 min %
2	Aggregates together with pigment & extender and solid glass beads	
3	Yellow pigment -- 80% +/- 2%	

z. All the thermoplastic material shall be tested as per MOST/ MORTH/ASTMD-36/BS- 3262 specifications and shall comply the chemical composition accordingly.

NOTE: Amount of Yellow pigment, calcium carbonate and inert fillers shall be at the option of the manufacturer provided all other requirements of this specification are met.

2. Properties :

The properties of thermoplastic material, when tested in accordance with B.S. 3262 (Part I) shall be as below.

a: Luminance :-

White Day Light – Luminance at 45º-80 percent min as per AASHTO M 249.

Yellow: Day light – Luminance at 45º-45 percent as per AASHTO M 249.

b: Drying time :- When applied at a temperature specified by the manufacturer and to the required thickness, the material shall set to bear traffic in not more than 15 minutes.

c: Skid resistance : not less than 45 as per BS –6044.

d: Cracking resistance at low temperature : The material shall show no racks on application to concrete blocks.

e: Softening point :- 102.5 as per + 9.5c as per ASTM D 36

f: Flow resistance :- Not more than 25% per AASHTO M 249.

g. Yellowness index (for white thermoplastic paint) Not more than 0.12 as per AASHTO M 249.

3. Storage life: The material shall meet the requirement of these specifications for a period of one year. The thermoplastic material must also melt uniformly with no evidence of skins or unmelted particles for the one year storage period. Any material not meeting the above requirements shall be replaced by the manufacturer/supplier/contractor.

4. Reflectorisation : shall be achieved by incorporation of bears, the grading and other properties of the beads shall be as under.

a. Type-I beads are those which are a constituent of basic thermoplastic compound vide table mentioned in 3 (I).
b. Type –II beads are those which are to be sprayed on the surface.

5. The glass beads shall be transparent, colorless, and free from milkiness, dark particles and excessive air inclusions.

a) The glass beads shall meet the gradation requirements for the two types as given in table below.

Sieve size	Percent Type-I	Retained Type-II
1.18 mm	0 to 3	-
850 micron	5 to 20	0 to 5
600 micron	-	5 to 20
425 micron	65 to 95	-
300 micron	-	30 to 75
180 micron	0 to 10	10 to 30
Below 180 micron	-	0 to 15

b) The beads shall have a minimum of 70% true spheres.
c) The Class beads shall have a minimum refractive index of 1.50

d) The class beads shall be free of hard lumps and clusters and shall dispense readily under any conditions suitable for paint striping. They shall pass the free flow test.

6) The thermoplastic material shall readily get screeded/extruded at temperatures specified by the manufacturers for respective method of application to produce a line of specified thickness which shall be continuous and uniform in shape having clear and sharp edges.
7) The Subject: material up to heating to application temperatures, shall not exude fumes which are toxic obnoxious or injurious to persons or property.
8) Properties of finished road marking shall be under:
   1. The stripe shall not be slippery when wet.
   2. The marking shall not lift from the pavement in freezing weather.
   3. After application and proper drying, the stripe shall not show appreciable deformation or discoloration under traffic and road temperature up to 60º.
   4. The marking shall not deteriorate by contact with sodium chloride or oil drippings from traffic.
   5. The stripe or marking shall maintain its original dimensions position. Cold ductility of the material shall be such as to permit normal movement with the road surface without chopping or cracking.

9) Durability : The road markings shall be highly durable in all weather and traffic conditions. It shall last for a period of at least one year. The markings when tested shall show no sign of cracking, flaking, peeling off or disintegration.

10) The marking shall be done by machine. For locations where painting cannot be done by machine, approved manual methods shall be used with prior approval of Engineer. The contractor shall maintain control on traffic while painting operations are in progress so as to cause minimum inconvenience to traffic compatible with protecting the workmen.

11) The thermoplastic material shall be applied hot either by screeding or extrusion machine at temperature within the range specified by the manufacturer.

12) The pavement temperature shall not be less than 10ºc during application and the surface shall be thoroughly cleaned of all dust, dirt, grease, oil and all other foreign matter before application of the paint.The finished lines shall be free from ruggedness on sides and ends, and be parallel to the general alignment of the carriageway. The upper surface of the lines shall be level, uniform, and

free from streaks.

13) The paint shall be applied in intermittent or continuous lines as directed and specified and of uniform thickness of at least 2.5mm.Unless specified or otherwise.

14) Where arrows or letters are to be provided the paint may be hand applied. In addition to the beads included in the material a further quantity of glass beads of type-2 . Conforming to the above noted specification all be sprayed uniformly into a mono layer on to the hot paint line in quick succession of the paint spraying operation. The glass beads shall be applied at the rate of 250 grams per square meter area. The minimum thickness specified is exclusive of surface applied glass beads.

15) The thermoplastic road marking material shall be kept in bags made of material which does not contaminate the contents and which protects the contents from contamination. Each bag shall contain not less than 20kg and not more than 110 kg of material.

16) Each bag shall be clearly and indelibly marked with the following information.

a) The name, trade mark or other means of identification of the manufacturer.

1. Batch number.
2. Date of manufacture.
3. The number and date of B.S. 3262 part I of 1989./MORTH/ASTM D36
4. Whether reflectorised.
5. Colour
6. Chemical description and type of resin.
7. Maximum application temperature and max safe, heating temperature.
8. Relative density.
9. If applicable the class of its contents.
10. If applicable a warning about the use of lead pigment.
11.
12. The tenderer shall furnish a copy of certified test reports from the manufacturer of glass beads obtained from a reputed laboratory showing results of all the tests specified and shall certify that the material meets all the requirements of specifications.
13.
14. The thermoplastic material used should be complying to specifications of B.S.3262 Part-I
15. /ASTMD-36 /MORTH. A documentary proof for having tested the

thermoplastic material to the effect shall be produced with the tender.

16.

17. Completion: The successful tenderer shall carry out the work of road marking as per direction of M.C.G. M. as and when required.

18.

19. Payment: The Correct unit rate for road marking shall be payment in full compensation for furnishing all labour materials. Tools, equipments, including all incidental conforming to these specifications complete as per the approved drawing (s) or as directed by the Engineer and all other incidental costs necessary to complete the work to these specifications.

20. Notwithstanding the above, it shall be noted that the work shall comply with clause 803.4, 803.5, 803.6, 803.7, 803.8 and sub clauses mentioned there under in section 800 of the specifications for road & bridge works 1995 by the I.R.C. on behalf of Govt. of India, Minister of Surface Transport.(Roads Wing).

21. Tenderers may refer to IRC specifications mentioned above before filling up the tender. Properties of finished Road Markings

22. The finished lines shall be free ruggedness on sides and ends and be parallel to the general

23. alignment of the carriageway. The upper surface of the lines shall be level, uniform and free from streaks.

24. The stripe shall not be slippery when wet.

25. The marking shall not be lift from the pavement in freezing weather.

26. After application of proper drying, the stripe shall show no appreciable deformation or discoloration under traffic and under road temperatures upto 60ºC.

27. The marking shall not deterioate by contact with sodium chloride, calcium chloride or oil dripping from traffic.

28. The stripe or marking shall maintain its original dimensions and position. Could ductility of the material shall be such as to permit normal movement with the road surface without chopping or cracking.

29.

SPECIFICATIONS OF RAISED PAVEMENT MARKER AND FLEXIBLE MEDIAN MARKER

1) Retro - Reflective material shall be in the form of prismatic reflectors in single or dual cubes capable of providing total internal reflection. Retro reflective area shall be mouldedon methyl methacrylate material or polycarbonate. The body of Raised Pavement Marker shall be in plastic material and moulded from ASA (Acrylic StreneAcrylonitrite) or HIPS (HI- impact Polystyrene) or ABS material.

2) The width of retro-reflective Road stud shall not exceed 130mm & ht. shall not exceed 20.30 mm. The area of each retro-reflective material panel shall not be less

than 10.00 Sq.Cm.

3) The body colour of stud shall be yellow/white/red& reflective panel shall be in Ambercolour& OtherColour combinations as directed by engineer.

4) The studs shall be fixed on road surface using special bituminous installation adhesive. Nails shall not be used.. The studs shall not turn, twist, rotate or bend once it is fixed to the road surface. The stud shall be fixed in such a way that it cannot be removed by anti-social elements.

5) Contractor to whom, the contract has been awarded have to install Road studs that support a load bearing capacity of13635 Kg tested in accordance with ASTM D4280 TypeH and complying to specifications of category A of MORTH circular no. RW/NH/33023/10-97 –DO III dated 11.06.1997.

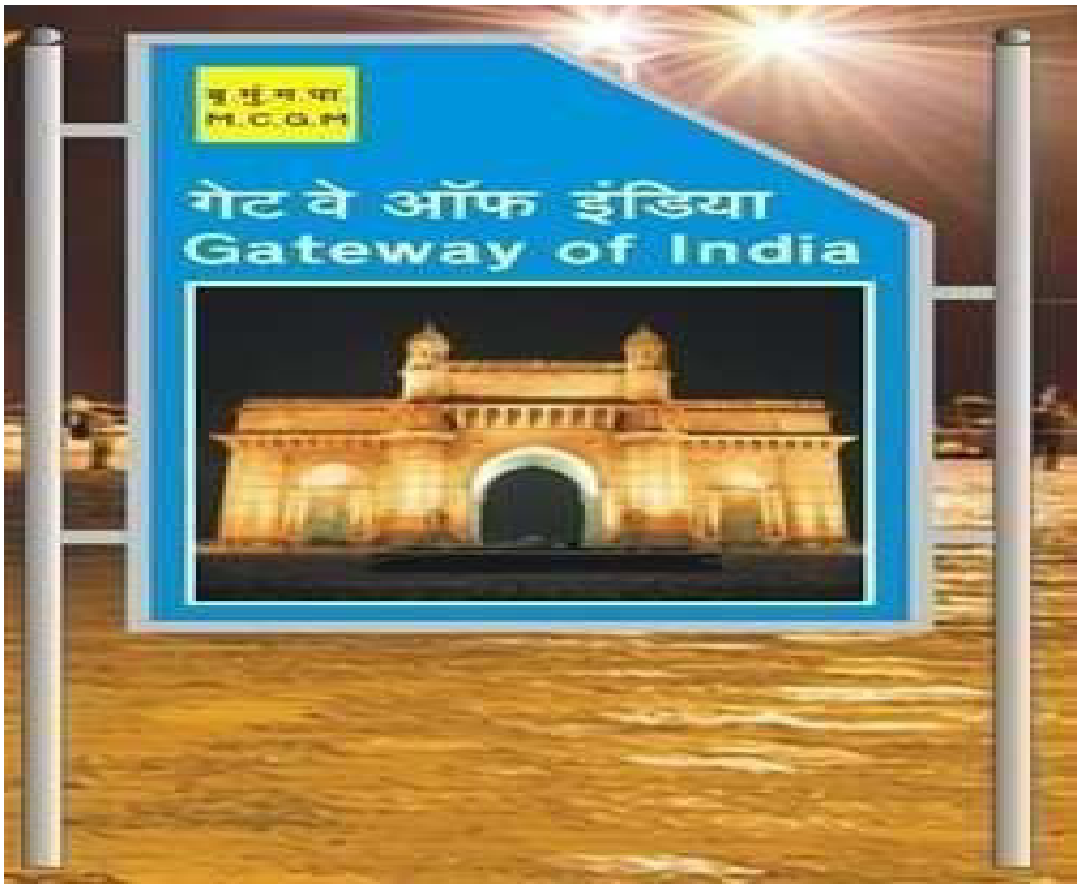
6) The contractor shall have to submit test report for passing the support load of 13635Kg tested in accordance with ASTM D4280 Type H and complying to specifications of category A of MORTH circular no. RW/NH/33023/10-97 –DO III dated 11.06.1997

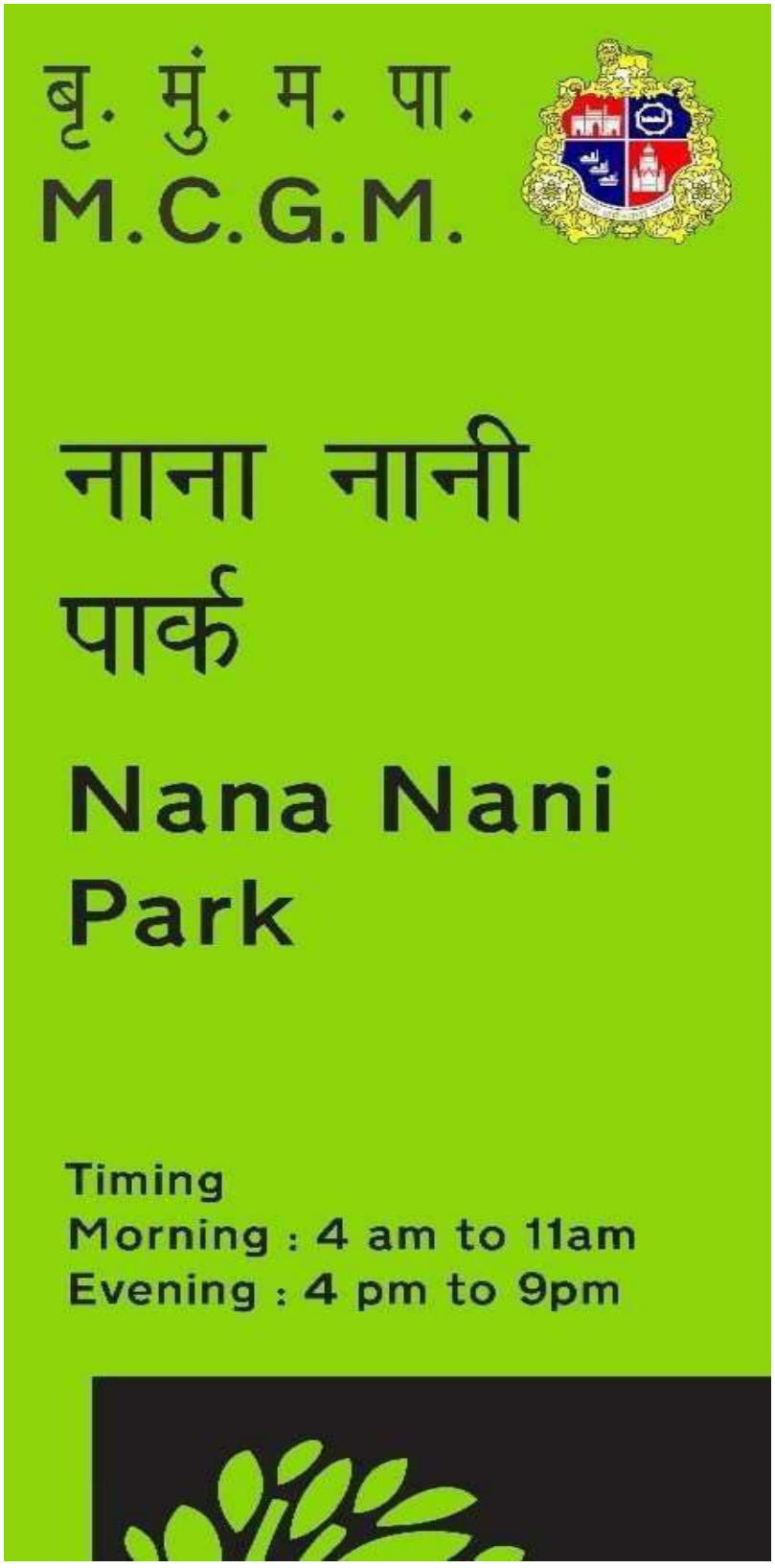
The material testing and reflectivity will be tested from random samples taken out from each batch/lot by the Engineer-In-Charge. The testing should be carried out at Govt. Recogniz laboratory and the cost of the testing shall be borne by the successful contractor. The reflectivity value shall be in conformity with the specification criteria as per ASTM D4280 designated 'H' values.

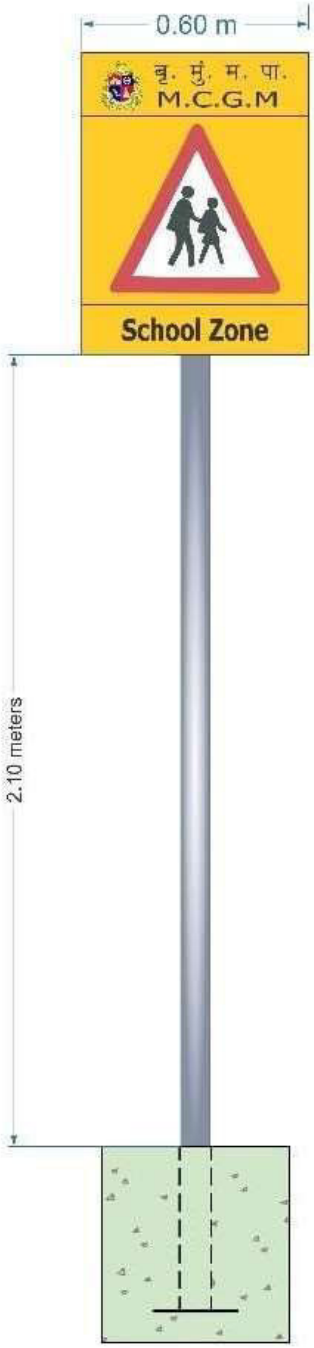
Warranty and Durability: The contractor shall obtain from the manufacture a 24 months warranty for satisfactory field performance of the stipulated retro reflectance of the reflecting panel and submit the same to the Engineer. In case the markers lose their reflectivity compared to stipulated standards, the contractor would be required to replace all such markers within 03 days of the intimation from the Engineer at his own cost and with no extra remuneration to be paid for such works,

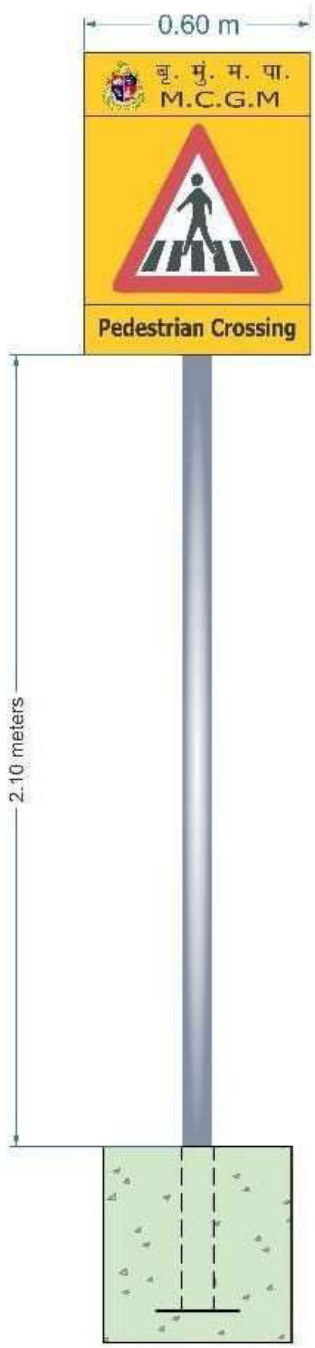
TYPICAL STANDARD DRAWINGS

NOTE:- The details shown in the drawing may vary as per the site condition and proportionate quantity to the requirement of work will vary.The contractor has to carry out the work as per site requirement and Engineer in charge of the project. (attached separately)


M.C.G.M
गेट वे ऑफ इंडिया
Gateway of India


बृ. मुं. म. पा.
M.C.G.M.
नाना नानी
पार्क
Nana Nani
Park
Timing
Morning : 4 am to 11am
Evening : 4 pm to 9pm


0.60 m
बृ. मुं. म. पा.
M.C.G.M
School Zone
2.10 meters


0.60 m
बृ. मुं. म. पा.
M.C.G.M
Pedestrian Crossing
2.10 meters


विभागाचे नाव
AREA NAME
एल बि एस मार्ग
LBS Marg

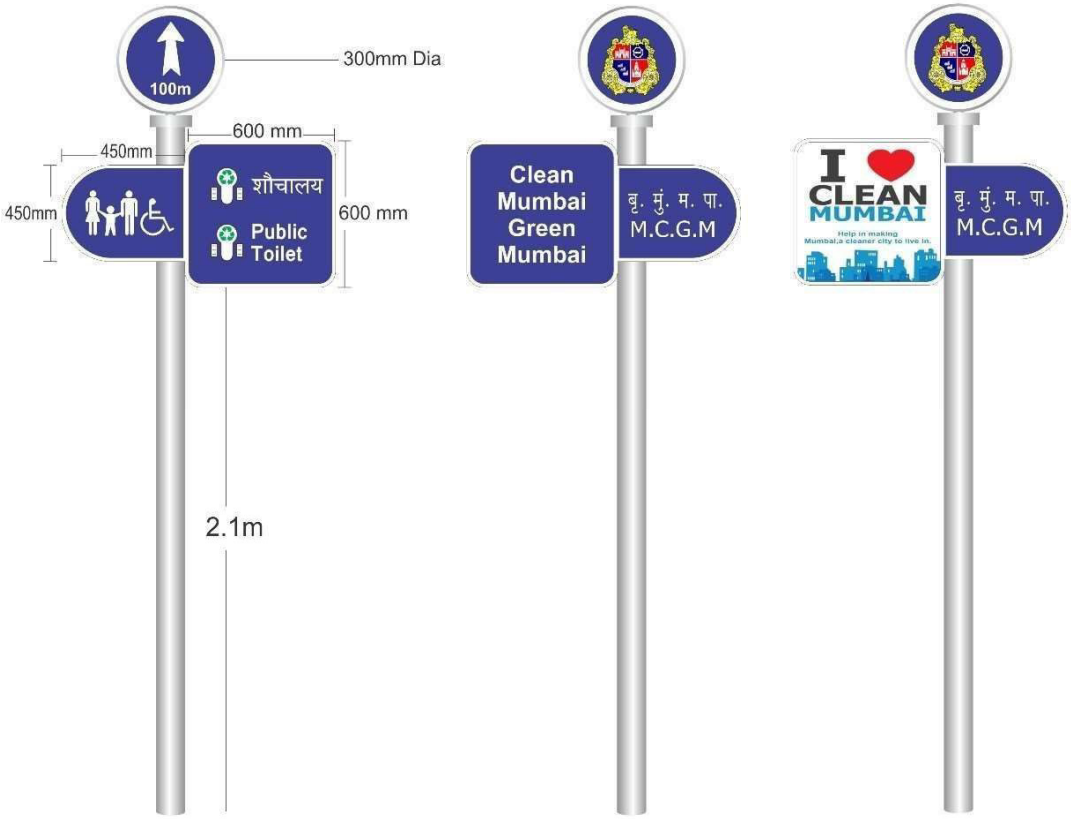

विभागाचे नाव
AREA NAME
एल बि एस मार्ग
LBS Marg

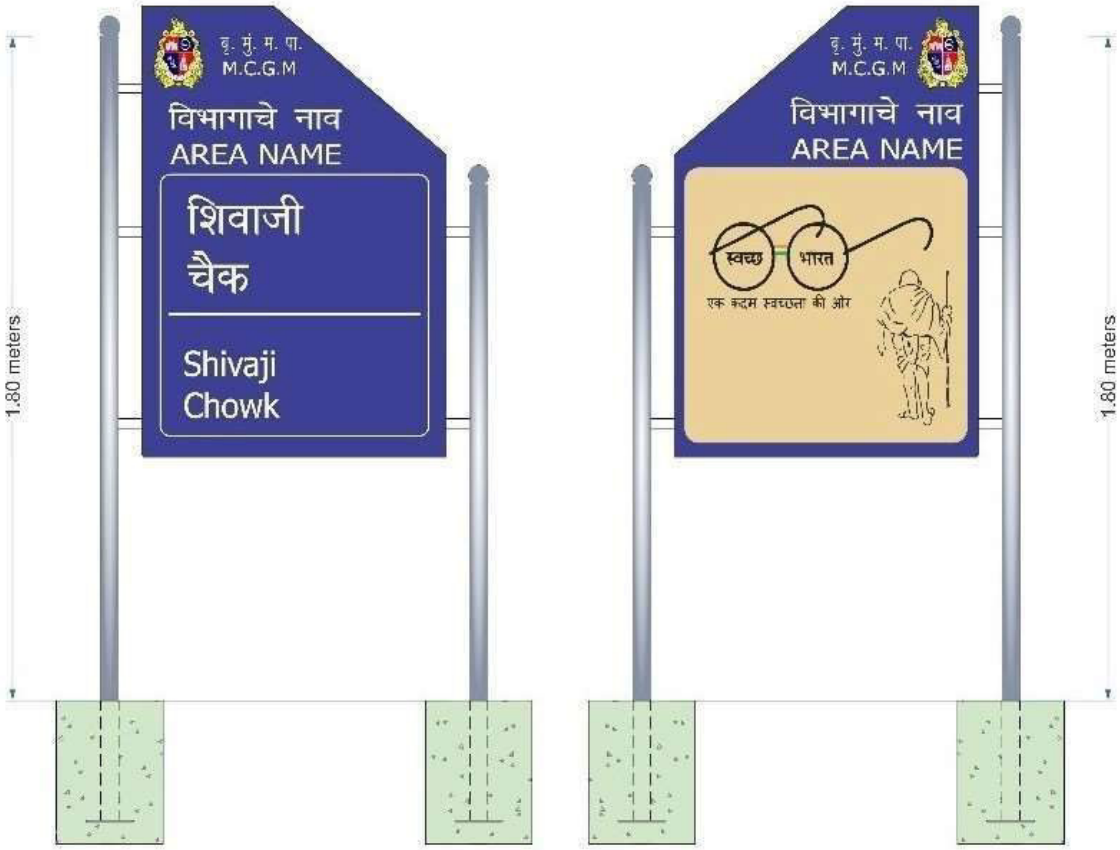

विभागाचे नाव
AREA NAME
एल बि एस मार्ग
LBS Marg

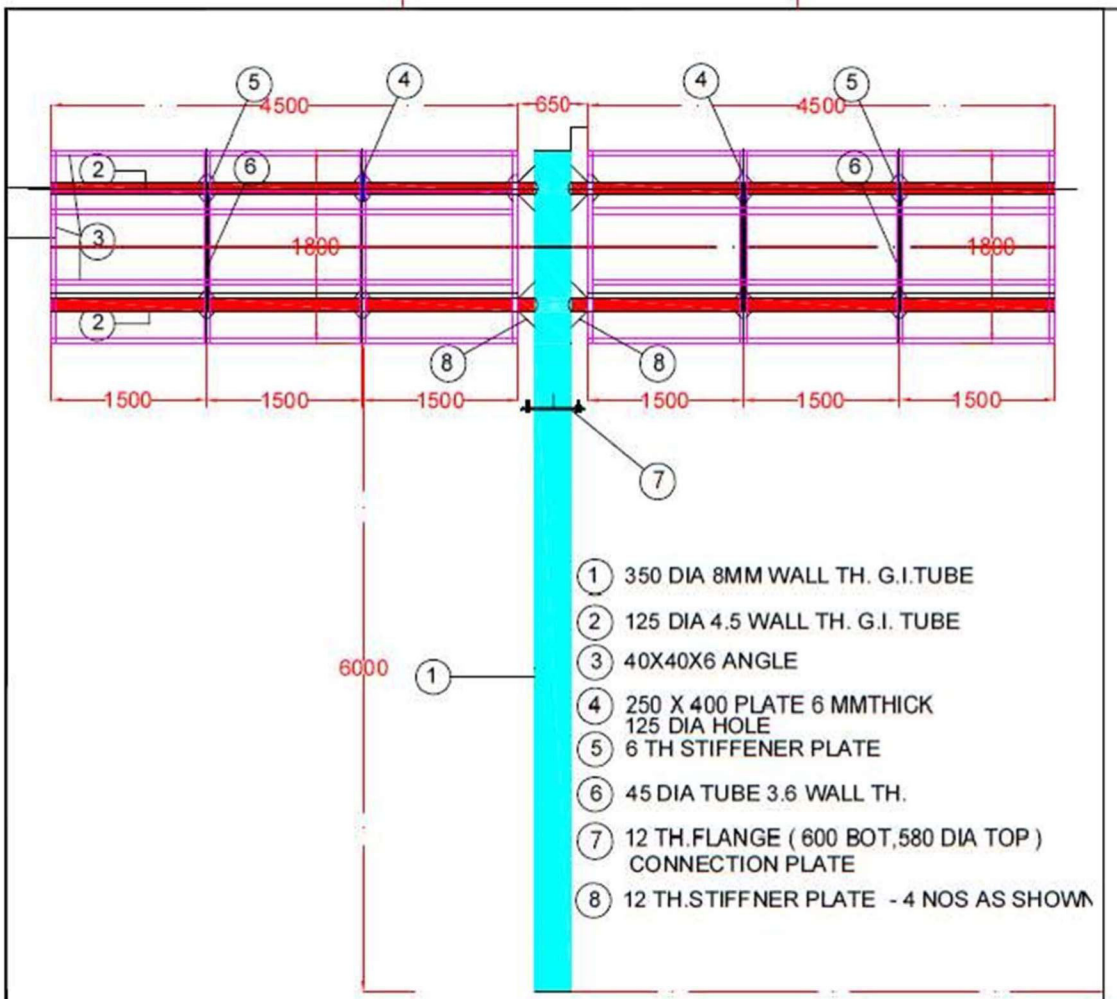

विभागाचे नाव
AREA NAME
एल बि एस मार्ग
LBS Marg


विभागाचे नाव
AREA NAME
एल बि एस मार्ग
LBS Marg


बृ. मुं. म. पा.
M.C.G.M
विभागाचे नाव
AREA NAME
वडाला रोड
वडाला रोड
Vadala Road
1.80 meters


100m
300mm Dia
600 mm
450mm
450mm
शौचालय
Public
Toilet
600 mm
2.1m
Clean
Mumbai
Green
Mumbai
बृ. मुं. म. पा.
M.C.G.M
I
CLEAN
MUMBAI
बृ. मुं. म. पा.
M.C.G.M


बृ. मुं. म. पा.
M.C.G.M
विभागाचे नाव
AREA NAME
शिवाजी
चैक
Shivaji
Chowk
1.80 meters
बृ. मुं. म. पा.
M.C.G.M
विभागाचे नाव
AREA NAME
स्वच्छ
भारत
एक कदम स्वच्छता की ओर
1.80 meters



NOTES

1. ALL DIMENSIONS ARE IN MM AND LEVELS
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL STRUCTURAL,GAD,SERVICES DRAWING ARE IN METRES
3. DISCREPANCY IF ANY SHOULD BE BROUGHT TO THE NOTICE OF STRUCTURAL CONSULTANT BEFORE STARTING THE WORK.
4. FOR LEVELS REFER RESPECTIVE DRAWINGS.
5. DO NOT SCALE DRAWING
6. SAFE BEARING CAPACITY ASSUMED min. 7.5 T/m2
7. GRADE OF CONCRETE : M20
   GRADE OF STEEL : FE 415 CONFORMING I.S.
   COVER TO REINFORCEMENT
   FOOTING (BOTTOM & SIDES) 75 MM 50 MM
   COLUMNS 40 MM
   BEAMS 25 MM
   SLAB 20 MM

OWNER -

MUNICIPAL CORPORATION OF GREATER MUMBAI

JOB TITLE-

DIRECTION BOARD SINGLE TYPE CANTILEVER FOR CHE.ENG. (ROADS AND TRAFFIC) DEPT. MCGM

CONTENTS OF SHEET-

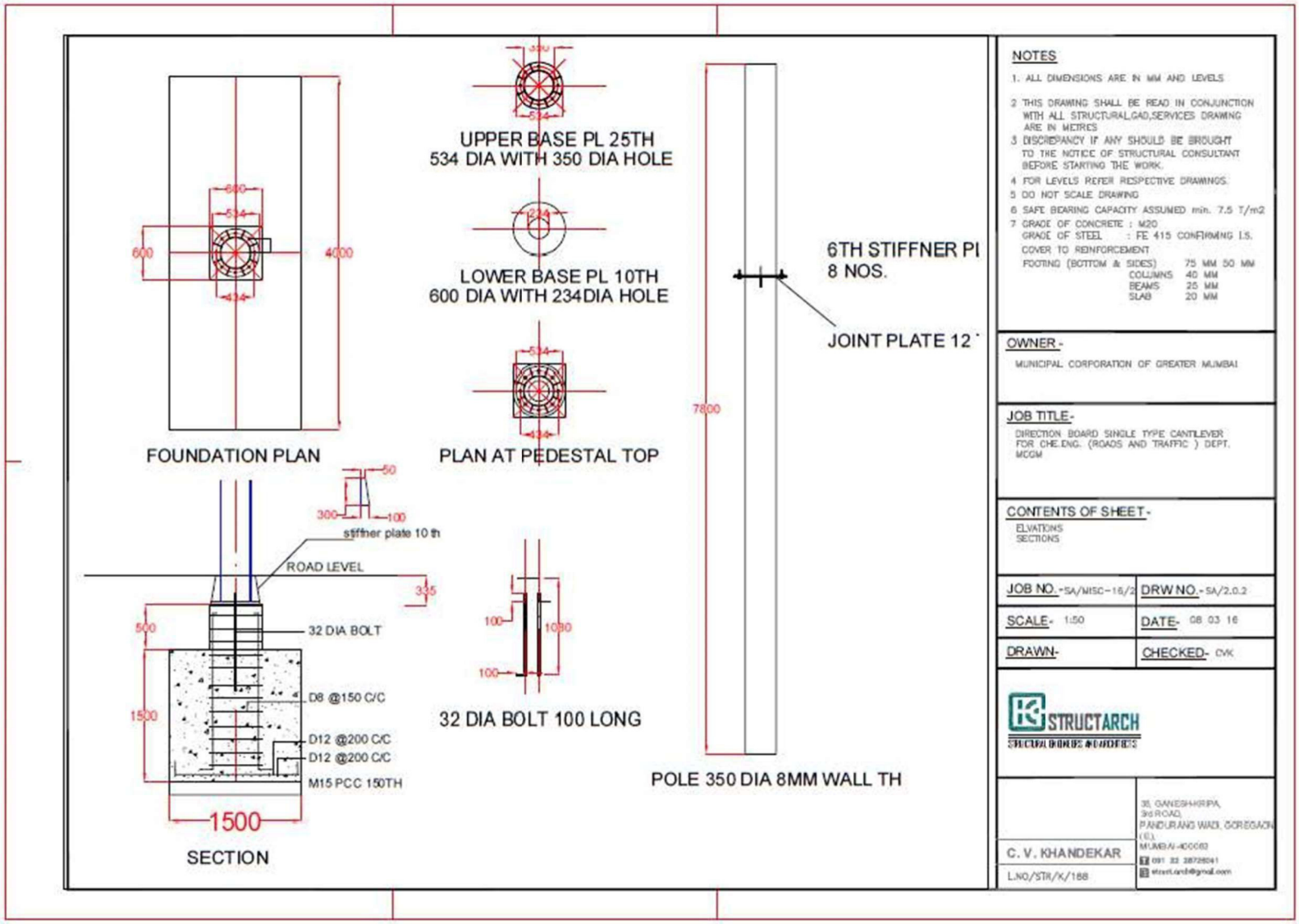
ELVATIONS
SECTIONS

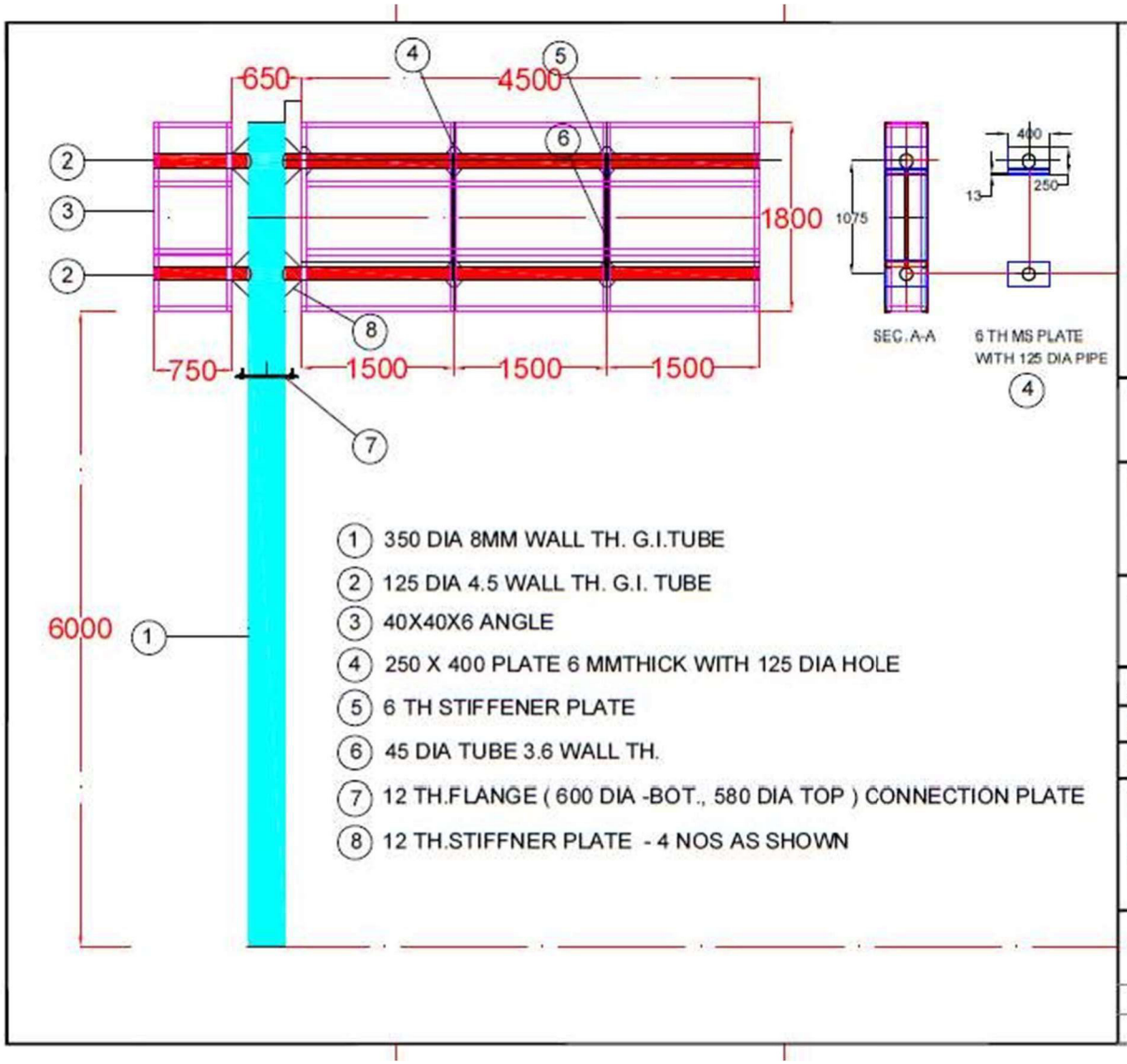
JOB NO.- SA/MISC-16/2	DRW NO.- SA/2.0.1
SCALE- 1:50	DATE- 08.03.16
DRAWN-	CHECKED- CVK

STRUCTARCH
STRUCTURAL CONSULTANTS AND ARCHITECTS

C. V. KHANDEKAR
LNO/STR/K/188

35, GANESH KRIPA,
3rd ROAD,
PANDURANG WADI, GOREGAON (E),
MUMBAI-400 063
091 22 28726041


FOUNDATION PLAN
UPPER BASE PL 25TH
534 DIA WITH 350 DIA HOLE
LOWER BASE PL 10TH
600 DIA WITH 234DIA HOLE
PLAN AT PEDESTAL TOP
6TH STIFFNER PI
8 NOS.
JOINT PLATE 12
7800
POLE 350 DIA 8MM WALL TH
stiffner plate 10 th
ROAD LEVEL
32 DIA BOLT
D8 @150 C/C
D12 @200 C/C
D12 @200 C/C
M15 PCC 150TH
1500
SECTION
32 DIA BOLT 100 LONG
NOTES
1. ALL DIMENSIONS ARE IN MM AND LEVELS
2 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL STRUCTURAL,GAD,SERVICES DRAWING ARE IN METRES
3 DISCREPANCY IF ANY SHOULD BE BROUGHT TO THE NOTICE OF STRUCTURAL CONSULTANT BEFORE STARTING THE WORK.
4 FOR LEVELS REFER RESPECTIVE DRAWINGS.
5 DO NOT SCALE DRAWING
6 SAFE BEARING CAPACITY ASSUMED min. 7.5 T/m2
7 GRADE OF CONCRETE : M20
GRADE OF STEEL : FE 415 CONFIRMING I.S.
COVER TO REINFORCEMENT
FOOTING (BOTTOM & SIDES) 75 MM 50 MM
COLUMNS 40 MM
BEAMS 25 MM
SLAB 20 MM
OWNER -
MUNICIPAL CORPORATION OF GREATER MUMBAI
JOB TITLE-
DIRECTION BOARD SINGLE TYPE CANTILEVER FOR CHE.ENG. (ROADS AND TRAFFIC) DEPT. MCGM
CONTENTS OF SHEET -
ELVATIONS
SECTIONS
JOB NO. -SA/MISC-16/2
DRW NO.- SA/2.0.2
SCALE- 1:50
DATE- 08 03 16
DRAWN-
CHECKED- CVK
STRUCTARCH
C. V. KHANDEKAR
L.NO/STR/K/188



NOTES

1. ALL DIMENSIONS ARE IN MM AND LEVELS
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL STRUCTURAL,GAD,SERVICES DRAWING ARE IN METRES
3. DISCREPANCY IF ANY SHOULD BE BROUGHT TO THE NOTICE OF STRUCTURAL CONSULTANT BEFORE STARTING THE WORK.
4. FOR LEVELS REFER RESPECTIVE DRAWINGS.
5. DO NOT SCALE DRAWING
6. SAFE BEARING CAPACITY ASSUMED min. 5 T/m2
7. GRADE OF CONCRETE : M20
   GRADE OF STEEL : FE 415 CONFORMING I.S.
   COVER TO REINFORCEMENT
   FOOTING (BOTTOM & SIDES) 75 MM 50 MM
   COLUMNS 40 MM
   BEAMS 25 MM
   SLAB 20 MM

OWNER -
MUNICIPAL CORPORATION OF GREATER MUMBAI

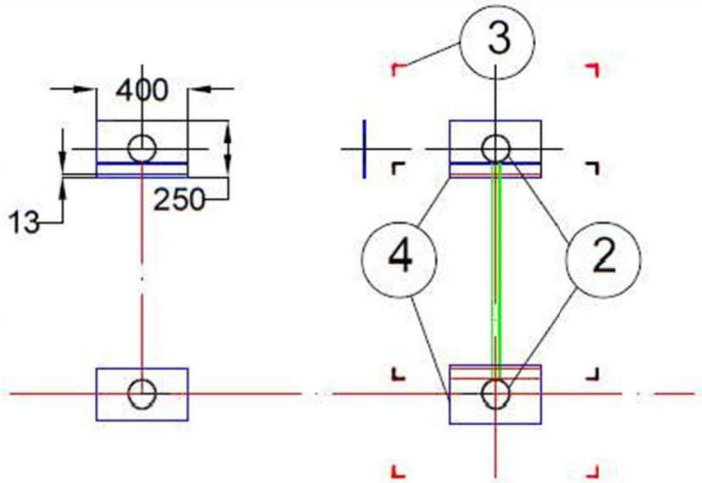
JOB TITLE-
DIRECTION BOARD SINGLE TYPE CANTILEVER FOR CHE.ENG. (ROADS AND TRAFFIC) DEPT. MCGM

CONTENTS OF SHEET -
ELVATIONS
SECTIONS

JOB NO.- SA/MISC-16/2	DRW NO.-SA/1.0.1
SCALE- 1:50	DATE- 08 03 16
DRAWN-	CHECKED- CVK

STRUCTARCH
STRUCTURAL ENGINEERS AND ARCHITECTS

C. V. KHANDEKAR
LNO/STR/K/188
35, GANESH KRIPA, 3rd ROAD, PANDURANG WADI GOREGAON (E.), MUMBAI-400 063
091 22 28728041



6 TH MS PLATE
WITH 125 DIA PIPE

4

45 DIA TUBE
CONNECTION WITH
PLATE / MAIN PIPE
BOX ANGLES

NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE
2 CHANGES IF ANY SHALL BE BROUGHT TO THE NOTICE OF CONSULTANTS
3. STRUCTURAL STEEL SHALL CONFIRM IS2062, fy=25000N/mm2
4. ALL BOLTS SHALL BE FITTED WITH SPRING WASHER
5. ALL WELDS SHALL BE 6 MM CONTINUOUS FILLET TYPE WELD
6 ALL STRUCTURAL MEMBERS SHALL BE STRAIGHT AND PAINTED AS PER SPECIFICATIONS.
7 ALL STRUCTURAL MEMBERS SHALL BE HOT DIP GALVANIZED AS PER IS 4759 WITH MIN.COATING THICKNESS OF 610G/SQM AND AVG.COATING THICKNESS OF 750G/SQM.
8 ALL NUTS SHALL CONFIRM IS 1367(PART6) CLASS 5 AS PER CLAUSE 4.1 OF IS 12427
9 FASTENING NUTS AND BOLTS SHALL BE HOT DIP GALVANIZES WITH MIN.COATING THICKNESS OF 500G/SQM AND AVG.COATING OF 550 G/SQM, AS PER IS 1367(part xiii)
10 PLANE WASHERS SHALL BE HOT DIP GALVANIZES WITH MIN.COATING THICKNESS OF 500G/SQM AND AVG.COATING OF 550 G/SQM, AS PER IS 4759 (CLAUSE 6.2 OF IS 12427-1988)
11 SPRING WASHERS SHALL BE ELECTRO GALVANIZED AS PER SERVICE GRADE 3 OF IS 1573
12 NOTCH ANGLES SHALL BE PROVIDED WHEREVER REQUIRED

NOTES

1. ALL DIMENSIONS ARE IN MM AND LEVELS
2 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL STRUCTURAL,GAD,SERVICES DRAWING ARE IN METRES
3 DISCREPANCY IF ANY SHOULD BE BROUGHT TO THE NOTICE OF STRUCTURAL CONSULTANT BEFORE STARTING THE WORK.
4 FOR LEVELS REFER RESPECTIVE DRAWINGS.
5 DO NOT SCALE DRAWING
6 SAFE BEARING CAPACITY ASSUMED min. 5 T/m2
7 GRADE OF CONCRETE : M20
GRADE OF STEEL : FE 415 CONFIRMING I.S.
COVER TO REINFORCEMENT
FOOTING (BOTTOM & SIDES) 75 MM 50 MM
COLUMNS 40 MM
BEAMS 25 MM
SLAB 20 MM

OWNER -
MUNICIPAL CORPORATION OF GREATER MUMBAI

JOB TITLE-
DIRECTION BOARD SINGLE TYPE CANTILEVER FOR CHE.ENG. (ROADS AND TRAFFIC) DEPT. MCGM

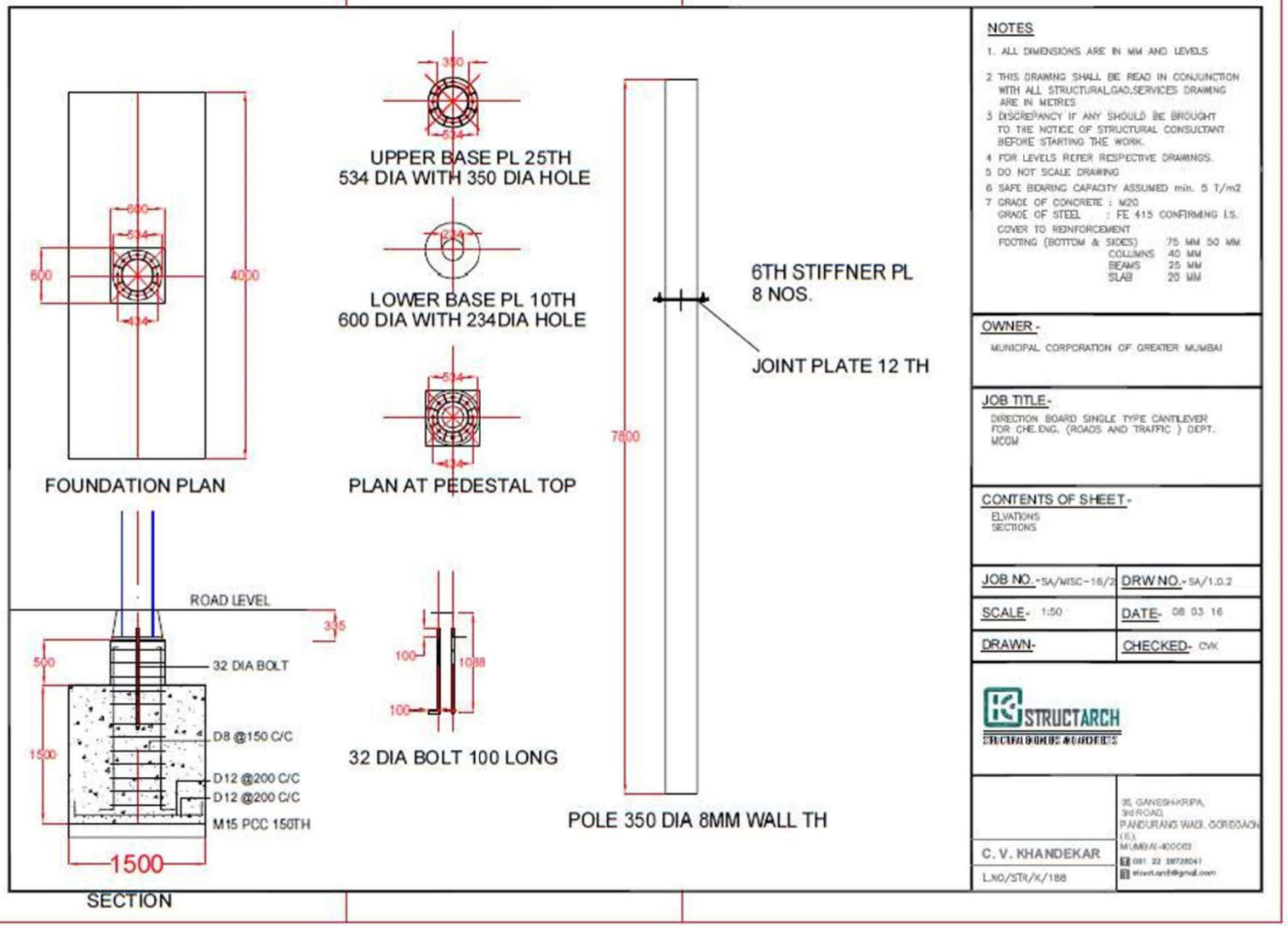
CONTENTS OF SHEET -
ELVATIONS
SECTIONS

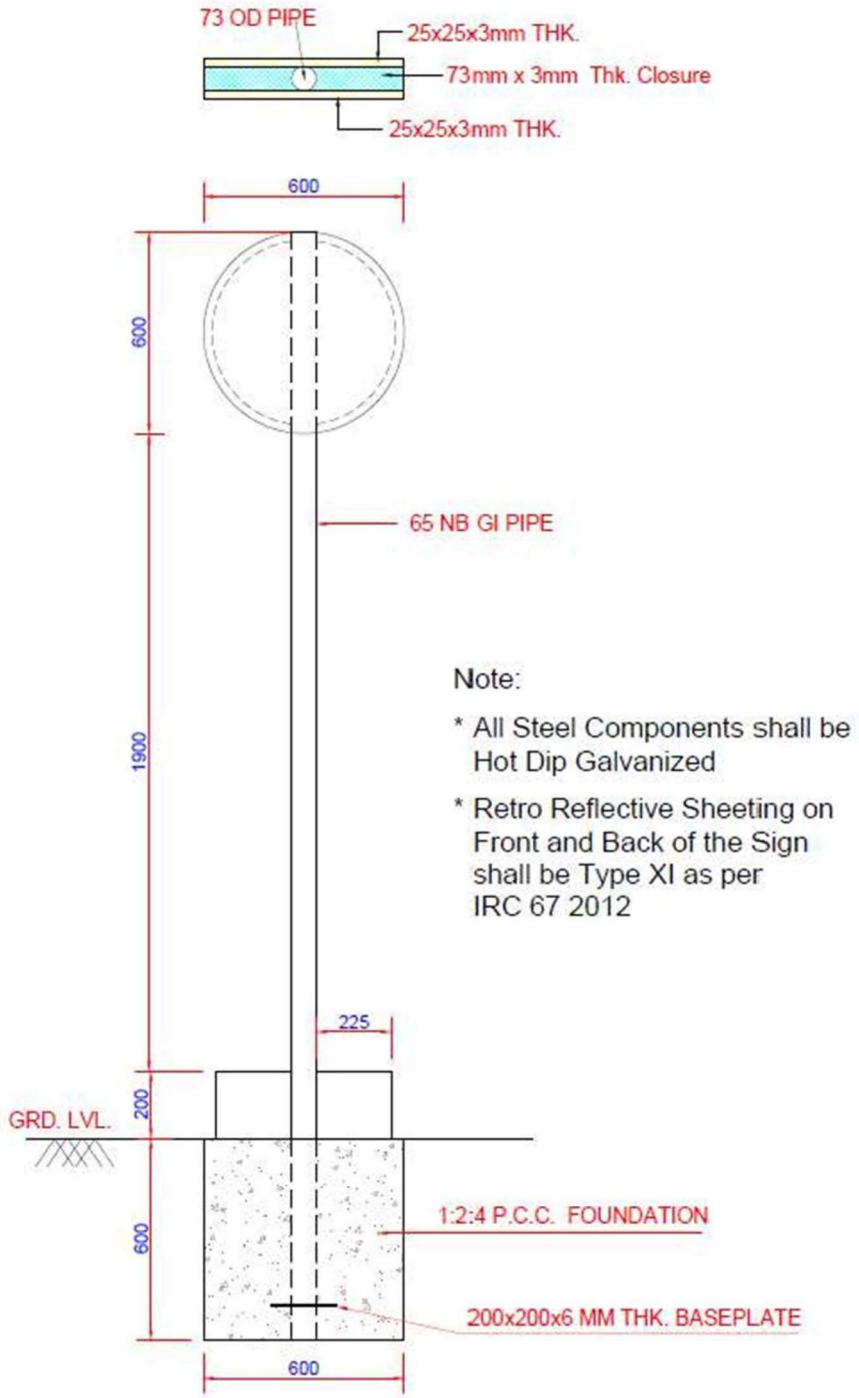
JOB NO.- SA/MISC-16/2	DRW NO.- SA/1.0.3
SCALE- 1:50	DATE- 08.03.16
DRAWN-	CHECKED- CVK

STRUCTARCH
STRUCTURAL ENGINEERS AND ARCHITECTS

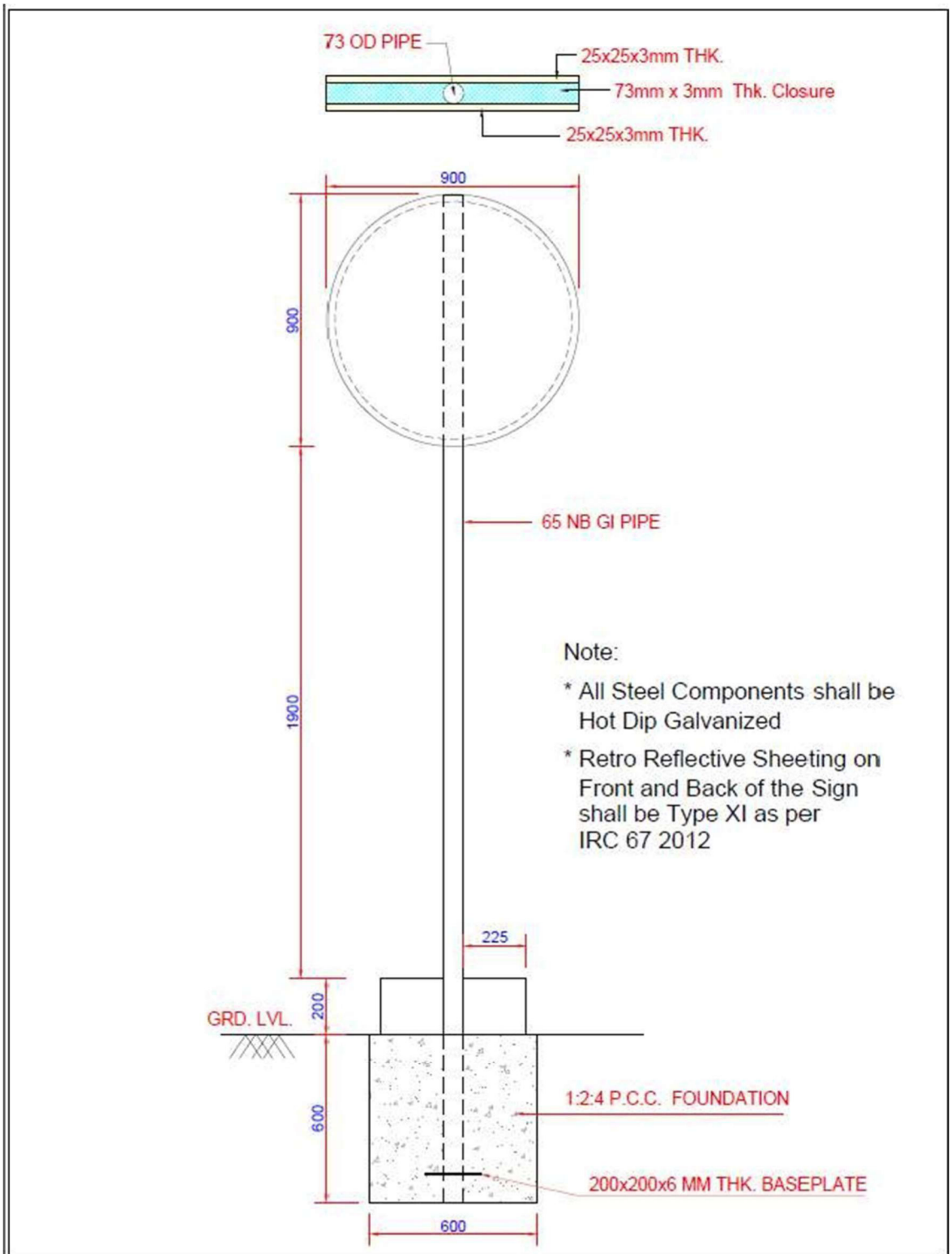
C. V. KHANDEKAR
L.NO/STR/K/188

35, GANESH-KRIPA,
3rd ROAD,
PANDURANG WADI, GOREGAON (E.),
MUMBAI-400 063
091 22 26728041
structarch@gmail.com

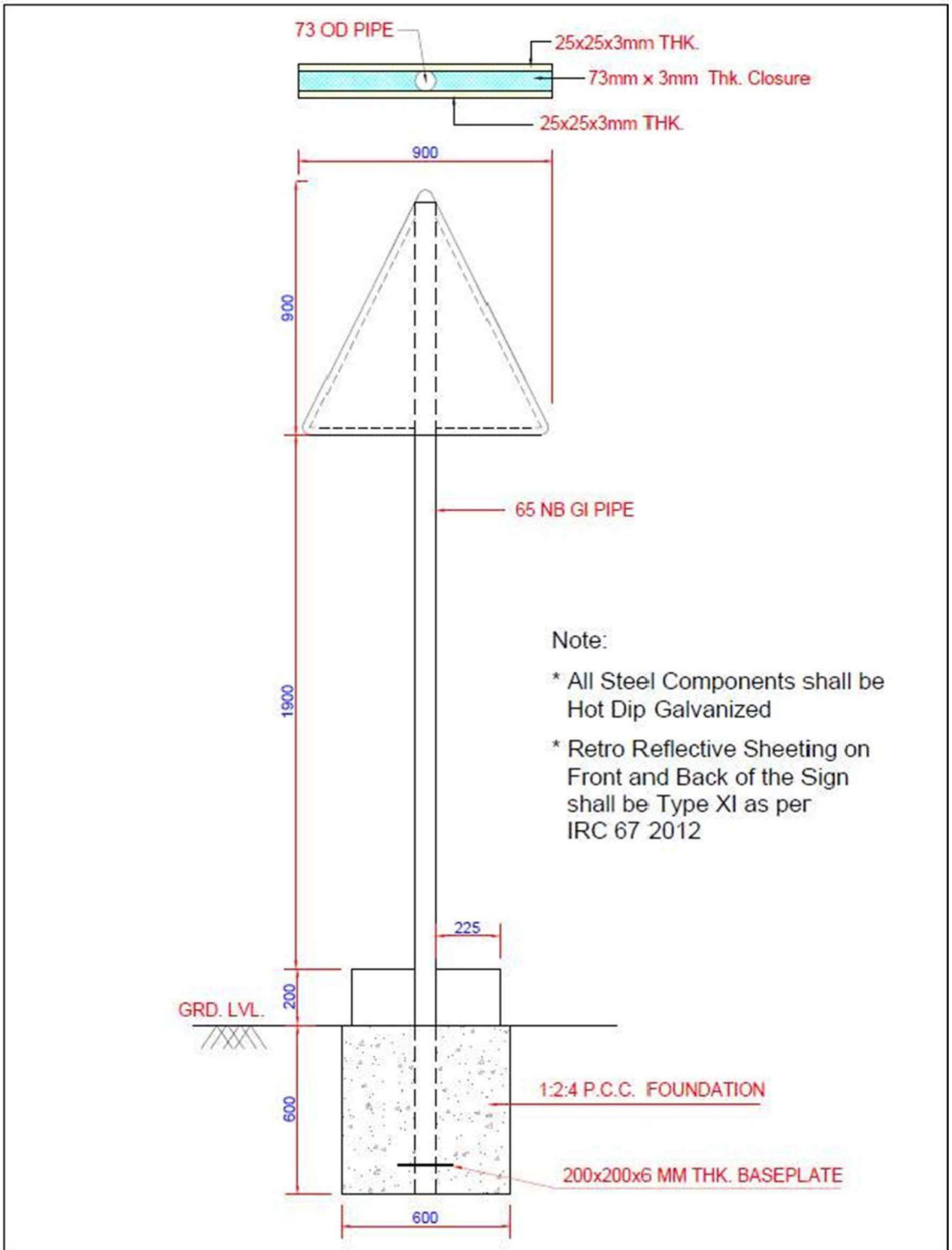

FOUNDATION PLAN
600
534
234
4000
UPPER BASE PL 25TH
534 DIA WITH 350 DIA HOLE
350
534
LOWER BASE PL 10TH
600 DIA WITH 234DIA HOLE
234
PLAN AT PEDESTAL TOP
534
234
6TH STIFFNER PL
8 NOS.
JOINT PLATE 12 TH
7800
ROAD LEVEL
335
500
32 DIA BOLT
D8 @150 C/C
1500
D12 @200 C/C
D12 @200 C/C
M15 PCC 150TH
1500
SECTION
100
1088
100
32 DIA BOLT 100 LONG
POLE 350 DIA 8MM WALL TH
NOTES
1. ALL DIMENSIONS ARE IN MM AND LEVELS
2 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL STRUCTURAL,GAD,SERVICES DRAWING ARE IN METRES
3 DISCREPANCY IF ANY SHOULD BE BROUGHT TO THE NOTICE OF STRUCTURAL CONSULTANT BEFORE STARTING THE WORK.
4 FOR LEVELS REFER RESPECTIVE DRAWINGS.
5 DO NOT SCALE DRAWING
6 SAFE BEARING CAPACITY ASSUMED min. 5 T/m2
7 GRADE OF CONCRETE : M20
GRADE OF STEEL : FE 415 CONFIRMING I.S.
COVER TO REINFORCEMENT
FOOTING (BOTTOM & SIDES) 75 MM 50 MM
COLUMNS 40 MM
BEAMS 25 MM
SLAB 20 MM
OWNER -
MUNICIPAL CORPORATION OF GREATER MUMBAI
JOB TITLE-
DIRECTION BOARD SINGLE TYPE CANTILEVER FOR CHE.ENG. (ROADS AND TRAFFIC) DEPT. MCGM
CONTENTS OF SHEET -
ELVATIONS
SECTIONS
JOB NO.- SA/MISC-16/2
DRW NO.- SA/1.0.2
SCALE- 1:50
DATE- 08.03.16
DRAWN-
CHECKED- CVK
STRUCTARCH
STRUCTURAL DESIGNS & CONSULTANTS
C. V. KHANDEKAR
L.NO/STR/X/188
35, GANESHKRIPA,
3rd ROAD,
PANDURANG WADI, GOREGAON (E),
MUMBAI-400063
091 22 28728041
structarch@gmail.com



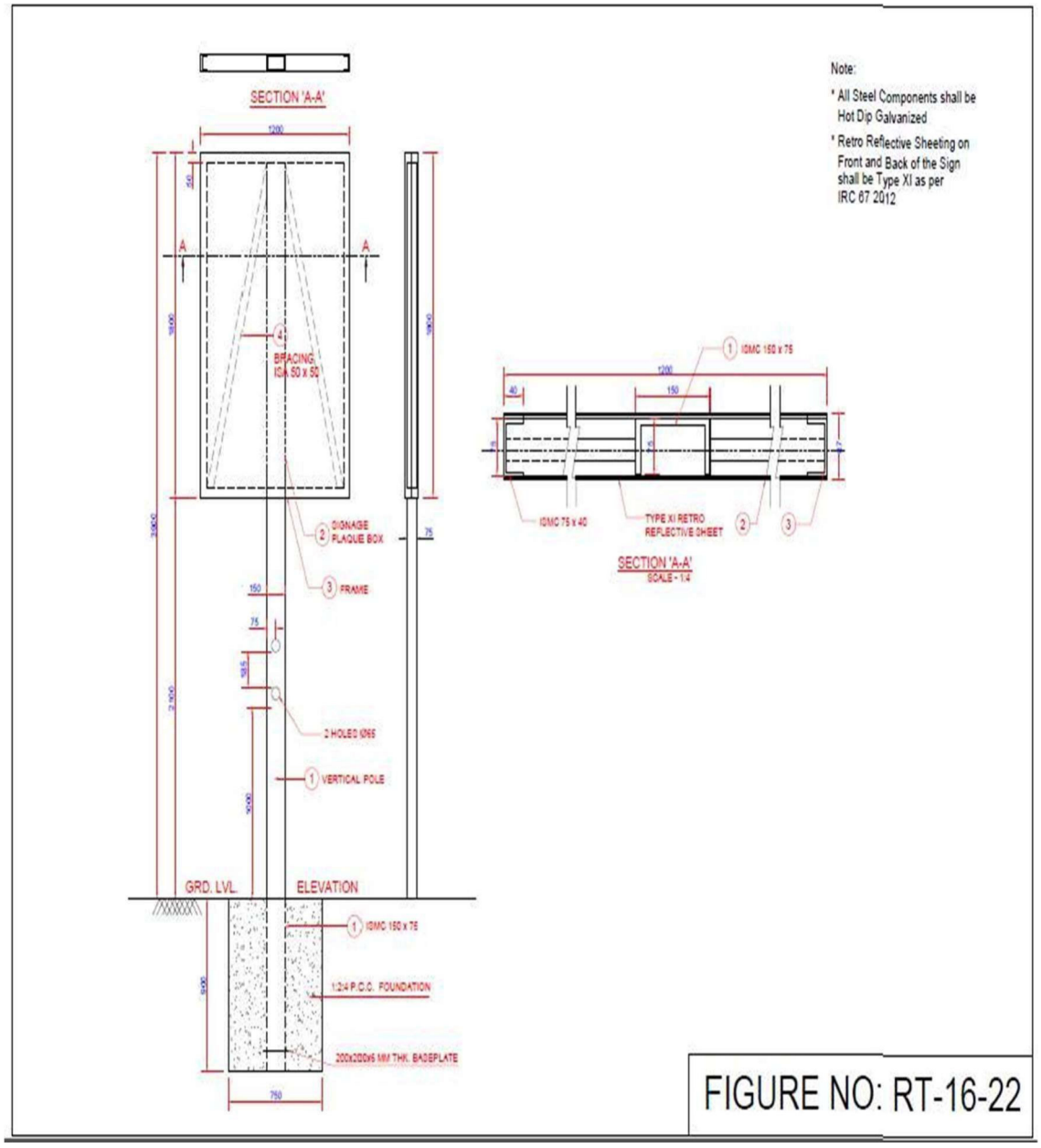
Mandatory Sign Drawing Refer Fig. M1

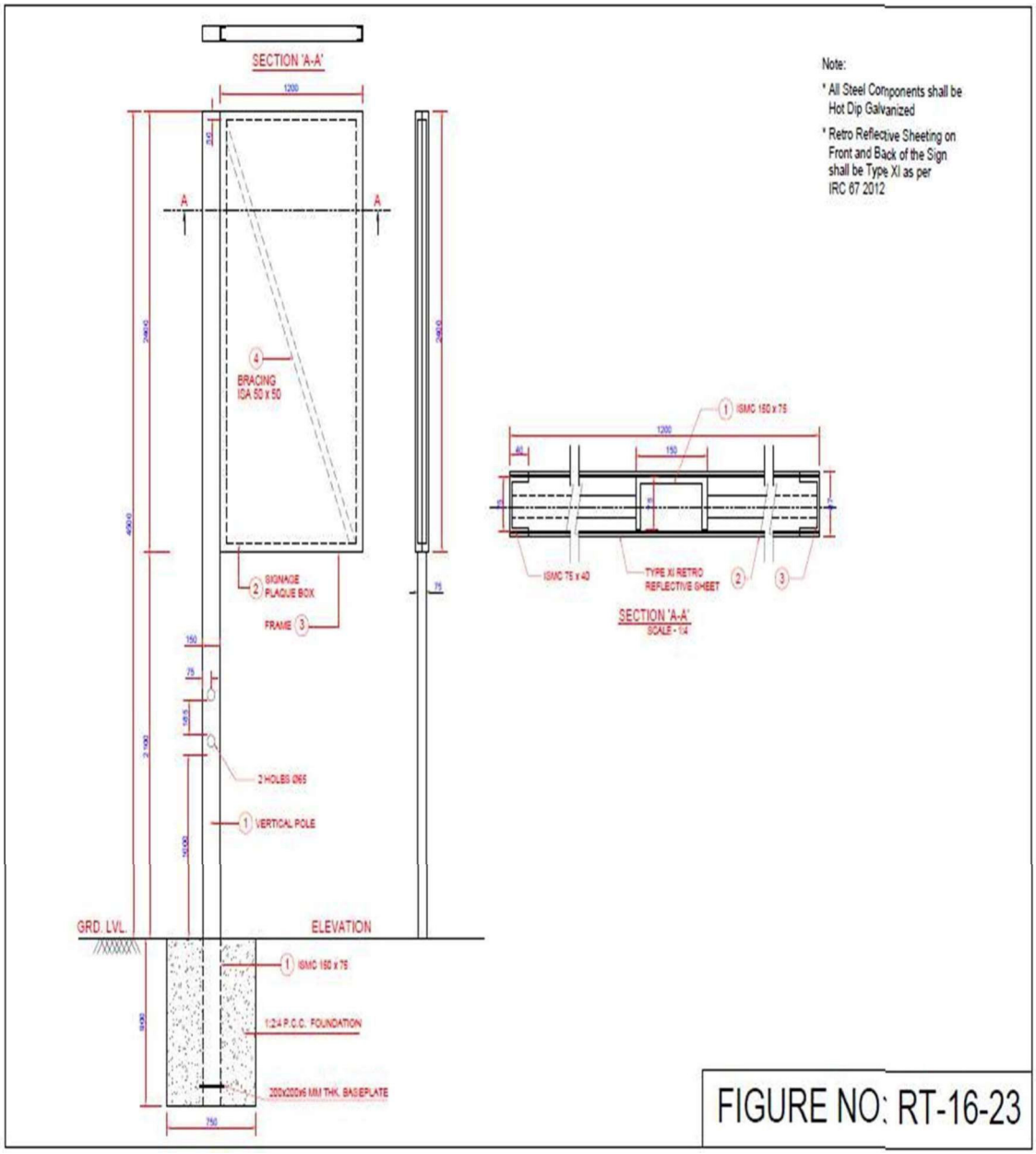


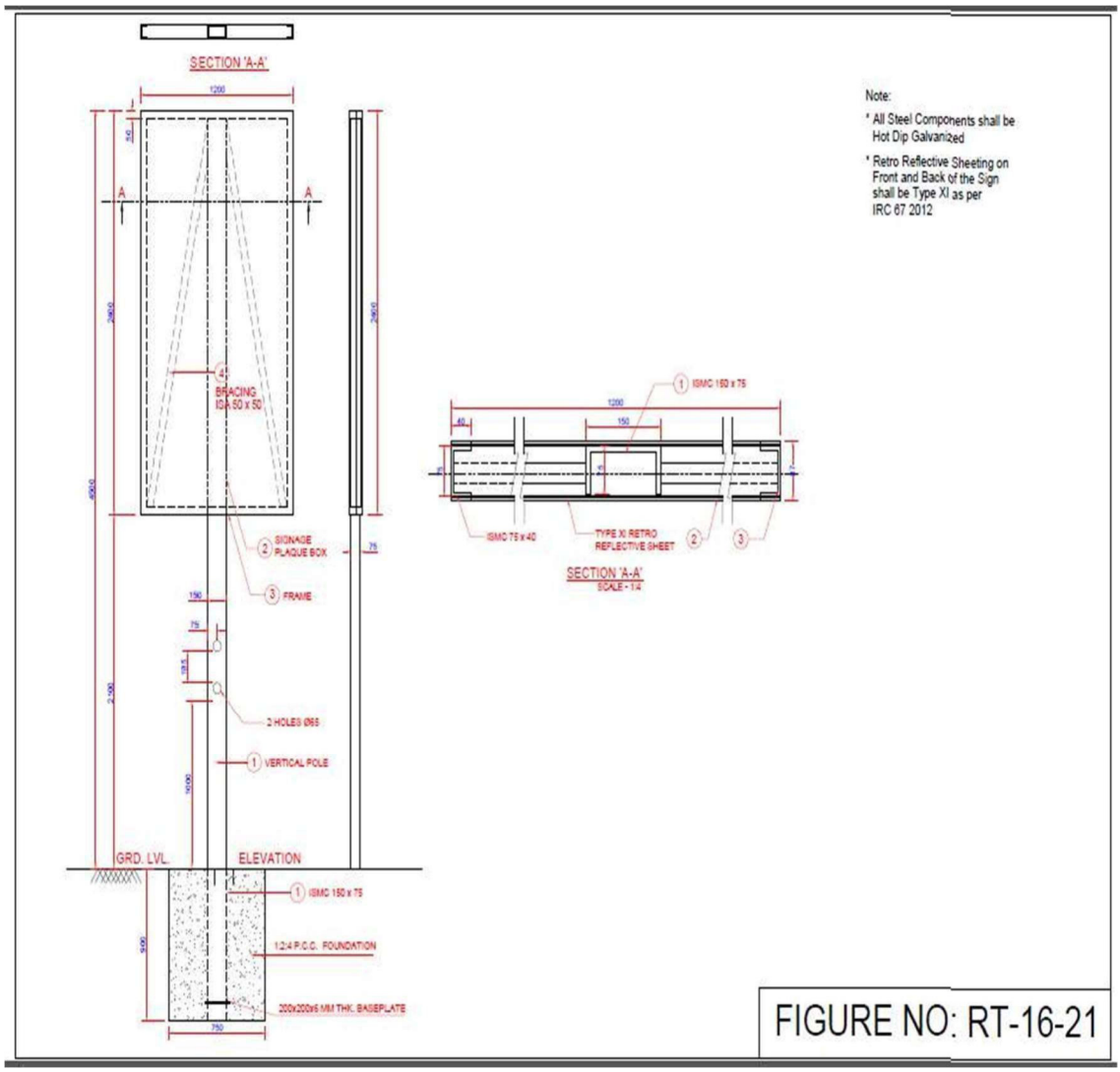
Mandatory Sign Drawing Refer Fig. M2

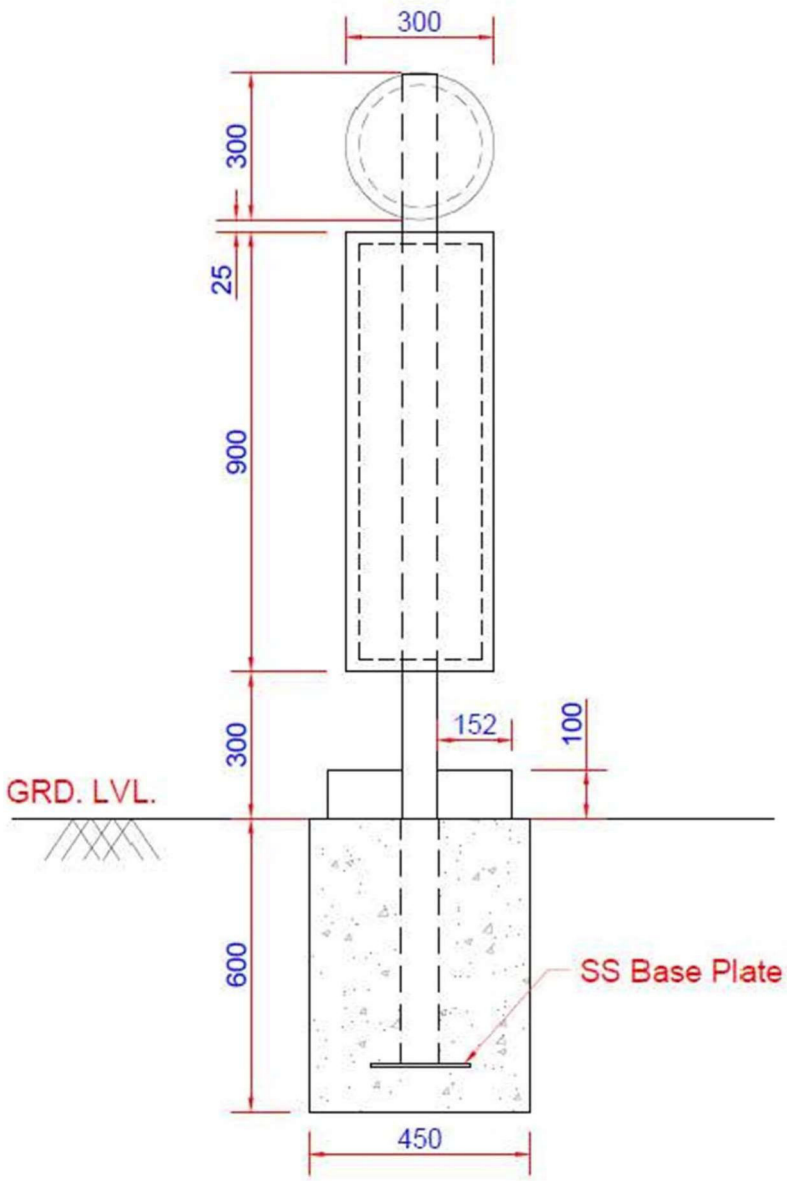


Cautionary Sign Drawing Refer Fig. C2


SECTION 'A-A'
1200
250
A
A
1800
BRACING
ISA 50 x 50
3800
2
SIGNAGE
PLAQUE BOX
75
3
FRAME
150
75
125
2 HOLES Ø65
1
VERTICAL POLE
3000
2400
GRD. LVL.
ELEVATION
1
ISMC 150 x 75
1:2:4 P.C.C. FOUNDATION
900
200x200x6 MM THK. BASEPLATE
750
Note:
* All Steel Components shall be Hot Dip Galvanized
* Retro Reflective Sheeting on Front and Back of the Sign shall be Type XI as per IRC 67 2012
1
ISMC 150 x 75
1200
40
150
75
75
ISMC 75 x 40
TYPE XI RETRO REFLECTIVE SHEET
2
3
SECTION 'A-A'
SCALE - 1:4
FIGURE NO: RT-16-22


SECTION 'A-A'
1200
A
A
4
BRACING
ISA 50 x 50
2
SIGNAGE
PLAQUE BOX
FRAME
3
150
75
2 HOLES Ø65
1
VERTICAL POLE
GRD. LVL.
ELEVATION
1
ISMC 150 x 75
1:2:4 P.C.C. FOUNDATION
200X200x6 MM THK. BASEPLATE
750
1
ISMC 150 x 75
1200
40
150
ISMC 75 x 40
TYPE XI RETRO
REFLECTIVE SHEET
2
3
SECTION 'A-A'
SCALE - 1:4
Note:
* All Steel Components shall be Hot Dip Galvanized
* Retro Reflective Sheeting on Front and Back of the Sign shall be Type XI as per IRC 67 2012
FIGURE NO: RT-16-23

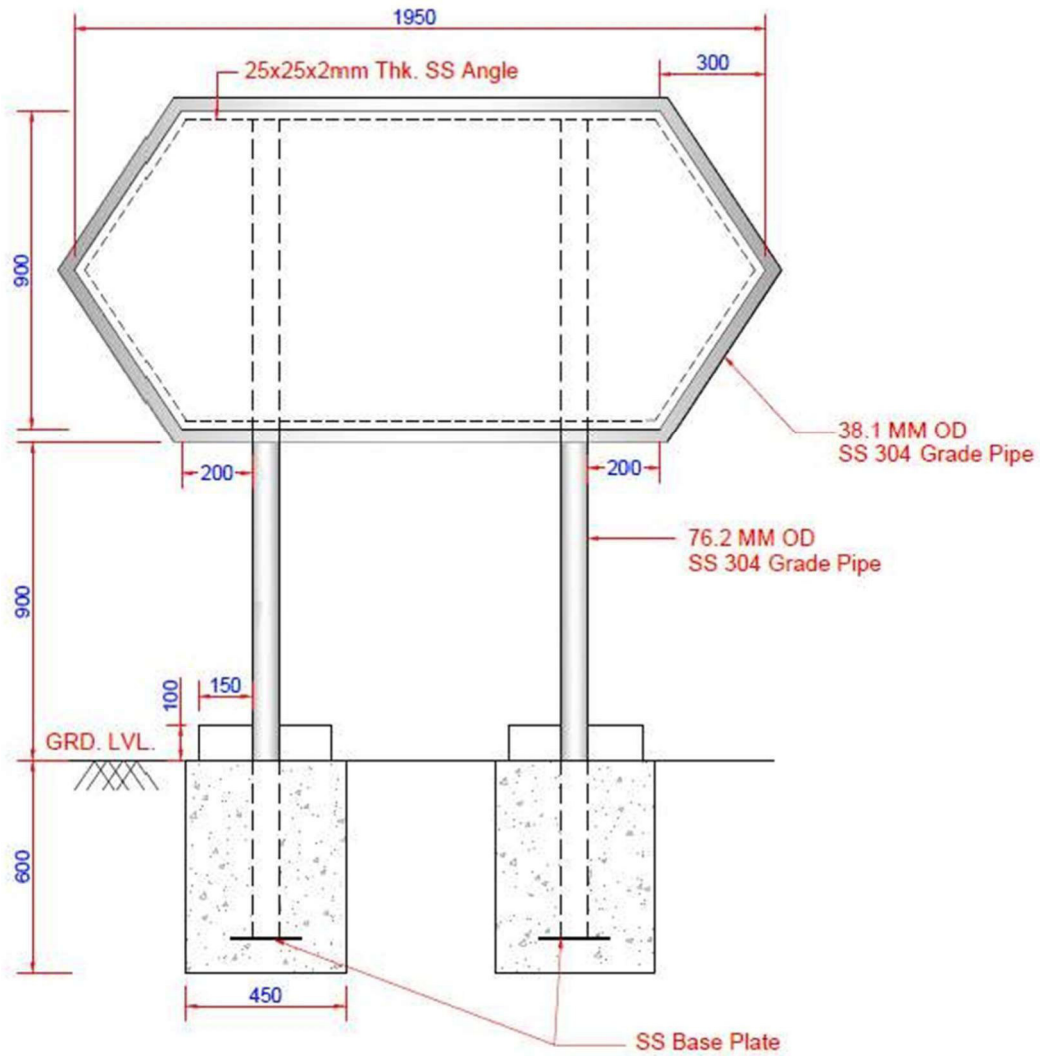

SECTION 'A-A'
1200
A
A
BRACING ISA 50 x 50
SIGNAGE PLAQUE BOX
FRAME
2 HOLES Ø65
VERTICAL POLE
GRD. LVL
ELEVATION
ISMC 150 x 75
1:2:4 P.C.C. FOUNDATION
200x200x6 MM THK. BASEPLATE
750
ISMC 150 x 75
1200
40
150
ISMC 75 x 40
TYPE XI RETRO REFLECTIVE SHEET
SECTION 'A-A'
SCALE - 1:4
Note:
* All Steel Components shall be Hot Dip Galvanized
* Retro Reflective Sheeting on Front and Back of the Sign shall be Type XI as per IRC 67 2012
FIGURE NO: RT-16-21



Note:

* All Steel Components shall be Hot Dip Galvanized
* Retro Reflective Sheeting on Front and Back of the Sign shall be Type XI as per IRC 67 2012

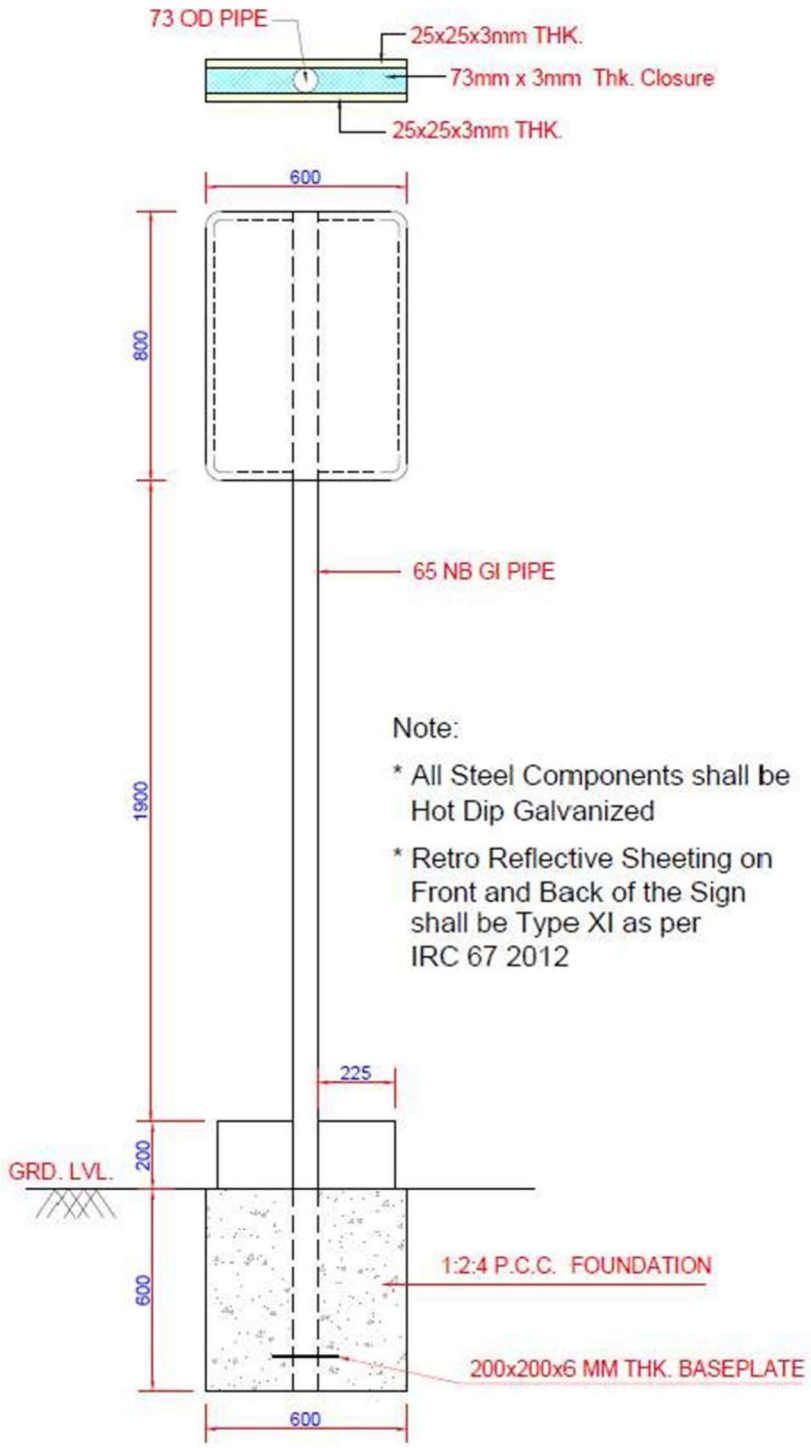
Hazard Marker Sign Board Refer Fig. HM1



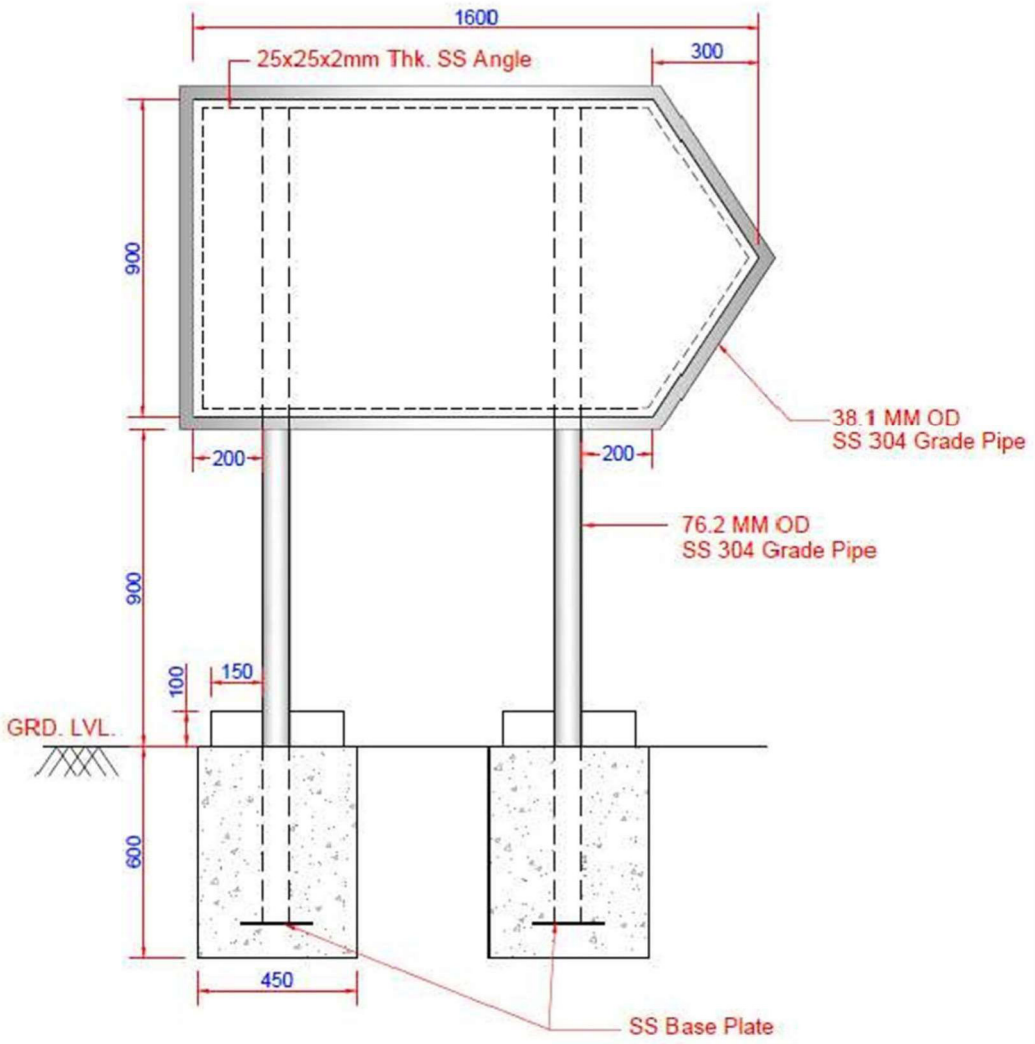
Note:

* All Steel Components shall be Stainless Steel 304 Grade
* Retro Reflective Sheeting on Front and Back of the Sign shall be Type XI as per IRC 67 2012

SS Double Arrow Street Name Board Refer Fig. SS2



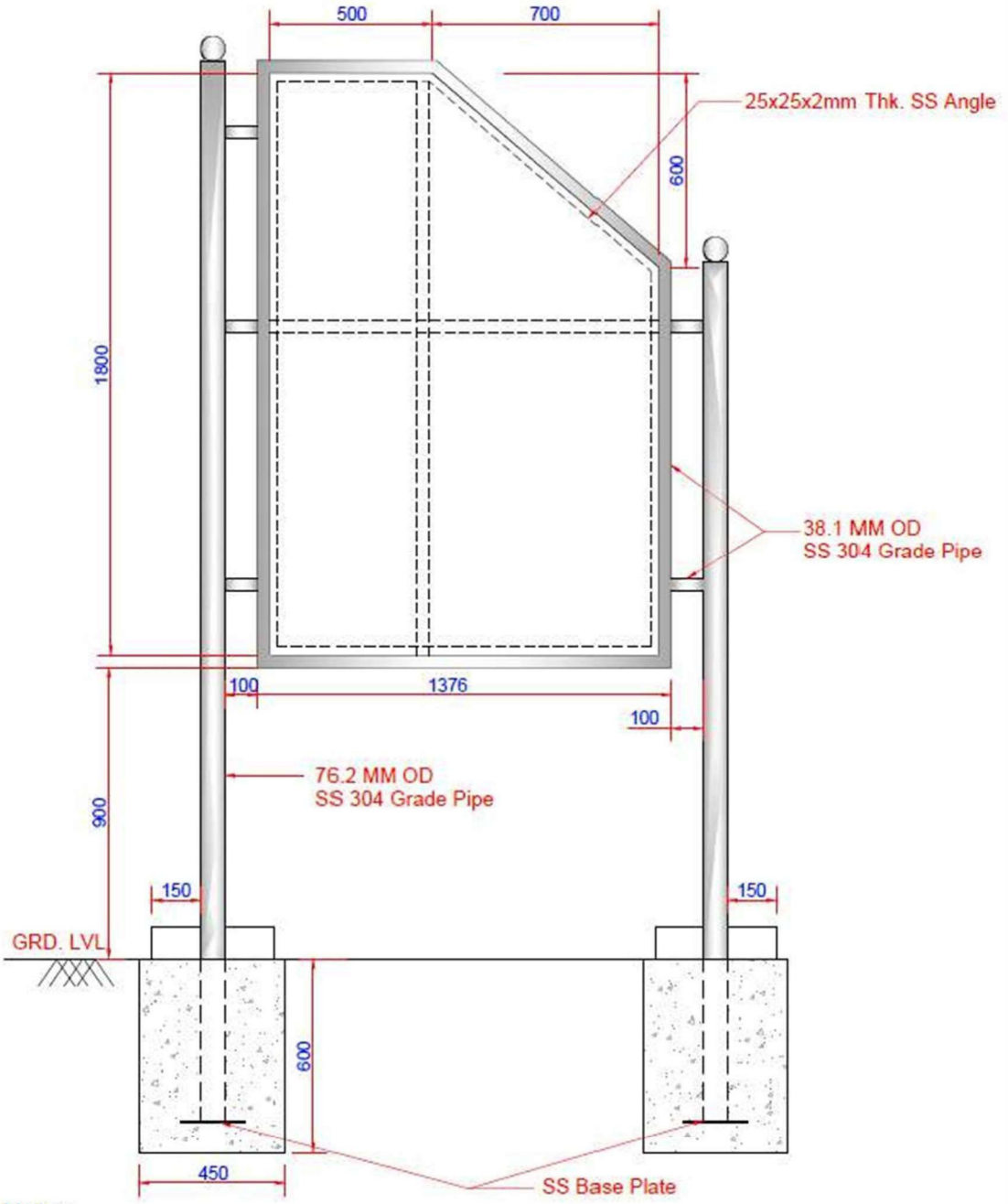
Inscribed Caut/Mand Sign Drawing Refer Fig. F3



Note:

* All Steel Components shall be Stainless Steel 304 Grade
* Retro Reflective Sheeting on Front and Back of the Sign shall be Type XI as per IRC 67 2012

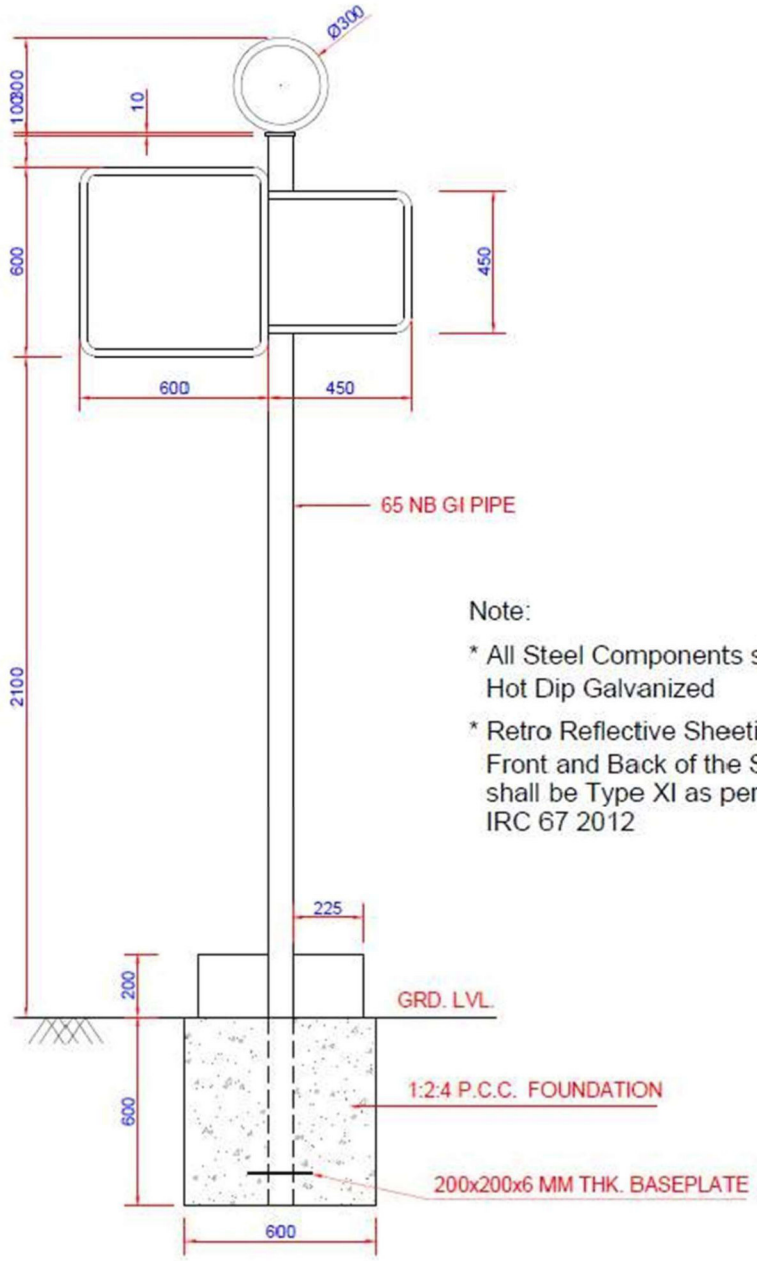
Single Arrow Street Name Board Refer Fig. SS1



Note:

* All Steel Components shall be Stainless Steel 304 Grade
* Retro Reflective Sheeting on Front and Back of the Sign shall be Type XI as per IRC 67 2012

SS Junction Name / Landmark Sign Board Refer Fig. SS3



Toilet Information Sign Drawing Refer Fig. T1

9. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Environmental Issue	*Mitigation Measures*	*Cross Reference to Documents*	*Time Frame*	*Responsibility*	
				Implementation	*Supervision*
Ecological impacts due to tree cutting	Trees falling within the alignment which are to be removed before commencement of construction shall be identified and approved by MMRC. Prior permission from MCGM/Tree authorities shall be obtained.	Preservation of Tree Act of Maharashtra , 1975	Before start of construction of relevant section	Contractor	GC
Natural habitats	All activities, construction vehicle movements and other miscellaneous activities must be restricted within project ROW. Temporary disposal of demolition debris, felled trees or locating labour camps and stock yards beyond the project ROW must be avoided.	M/o RT&H 201.2	Entire construction phase	Contractor	GC
Local Traffic Arrangement	Temporary traffic arrangement during construction within ROW has been planned in the DPR. This plan shall be periodically reviewed with respect to site conditions. During site clearance activity, the demolition debris shall be preferably removed during non-peak hours and with deployment of more vehicles for the purpose.	M/o RT&H: 112	During construction	Contractor	GC
Traffic Control and Safety	The Contractor shall take all necessary measures for the safety of traffic during demolition and site clearing activities. He shall provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required by the PMC for the information and protection of traffic	M/o RT&H : 112.4 M/o RT&H: 112	During construction	Contractor	GC
Safety of Pedestrians	Special consideration shall be given in the local traffic management to the safety of pedestrians The temporary traffic arrangement within ROW should be kept free of encroachments / commercial activities.	M/o RT&H: 112.2	During construction	Contractor	GC
Impact on land use outside ROW	Construction related activities shall be preferably restricted within project road ROW.	M/o RT&H 201.2	During entire site clearance and construction phases	Contractor	GC
Utility relocation	All utilities identified for relocation in the DPR to be shifted after prior approval of agencies. Utility relocation shall be carried out in the shortest possible time to reduce inconvenience to public.	M/o RT&H 110 BOQ Sec-12	Before start of construction in relevant section	Contractor	GC
Plying vehicles on unpaved roads	The unpaved roads, if used by the Contractor, shall be sprinkled with water at least once in a day to control the fugitive dust emissions.	M/o RT&H: 111:10	Construction Phase	Contractor	GC

Environmental Issue	*Mitigation Measures*	*Cross Reference to Documents*	*Time Frame*	*Responsibility*	
				Implementation	*Supervision*
Material Spill	All vehicles delivering material to the site shall be covered to avoid material spillage.	M/o RT&H: 111.9 M/o RT&H: 111.11 M/o RT&H: 111.12	Entire Construction Phase	Contractor	GC
Using existing hot mix/Concrete /Asphalt Plants	It is understood from the implementing authorities, that the Contractor will utilize the existing Concrete, Asphalt and Hot Mix Plants. Contractor shall ensure that existing plants, which are sourced, are licensed and authorized for operation by concerned authorities and shall intimate the MMRC prior to procuring materials from them. PMC shall procure relevant documents from the plant owners to ensure that they are adhering to relevant emission norms as laid out by MoEF/CPCB	M/o RT&H: 111.5	During Entire Construction Phase	Contractor	GC
Watering to control dust at site	Construction site to be watered periodically to minimize fugitive dust generation	M/o RT&H: 111.8	During entire construction Phase	Contractor	GC
Roads used for transport	Contractor shall ensure that the transport vehicles used to ferry materials and dispose debris does not create hazardous conditions for general traffic using the roadway	M/o RT&H: 111.9	During entire construction Phase	Contractor	GC
Barricading site	The construction site should be barricaded at all time in a day with adequate marking, flags, reflectors etc., for the safety of general traffic movement and pedestrians.	M/o RT&H 112 BOQ Item : 10.1 (a)	During Construction Phase	Contractor	GC
Earthwork	All earthwork and construction material should be stored in such a manner to minimize generation of dust and spillage on roads.	M/o RT&H 201.4	During entire construction phase	Contractor	GC
Idling of vehicles	Idling of delivery trucks or other equipment should not be permitted during periods of unloading or when they are not in active use. This practice must be ensured especially near sensitive receptors like places of worship.	M/o RT&H 201.2	During Construction Phase	Contractor	GC
Drilling Operations	All possible and practical measures to control noise emission during drilling operations shall be employed. The PMC may direct to take adequate control measures depending on site conditions.	M/o RT&H 111	During Construction Phase	Contractor	GC
Construction equipment emissions	Exhaust and noise emissions of construction equipment's shall adhere to emission norms as laid out by MOEF/CPCB.	Legal requirement	During Construction	Contractor	GC
Noise from construction related plants & equipments.	All construction equipment's shall be fitted with exhaust silencers. Damaged silencers to be promptly replaced by Contractor.	M/o RT&H: 111 BOQ : 10.12	During Construction	Contractor	GC

Environmental Issue	*Mitigation Measures*	*Cross Reference to Documents*	*Time Frame*	*Responsibility*	
				Implementation	*Supervision*
Noise impact due to operation of DG sets	DG sets, if used, shall adhere to noise standards of MoEF	M/o RT&H: 111	During Construction	Contractor	GC
Noise Control Measures	During blasting adequate noise control measures shall be prepared in advance prior to the blasting work starts. The noise levels shall adhere to local laws. Restricted blasting work hours and intermittent blasting could be few mitigation measures that can be adopted.	M/o RT&H: 282 PC Sub Clause 45.1	Before start of construction of relevant section	Contractor	GC
Noise level near residential areas and sensitive receptors	Construction activity induced noise levels shall be mitigated. The Contractor can employ mitigation measures such as restricted and/or intermittent activity or as directed by PMC.	M/o RT&H: 111 PC Sub Clause 45.1	During Construction of relevant sections	Contractor	GC
Noise due to foundation works at flyover site/bridges	Operation hours for noise generating equipments such as pile driving, concrete and drilling etc. shall be pre-approved by MMRC. The MMRC depending upon site conditions and as per prevailing local laws may regulate and/or restrict operation hours.	PC Sub Clause 45.1	During Construction	Contractor	GC
Exposure to Loud Noise	Workers exposed to loud noise (As per Factory Act requirements) shall wear earplugs/earmuffs.	M/o RT&H: 111.6 M/o RT&H: 105.2	During Construction	Contractor	GC
Storage of construction material	Construction material containing fine particles shall be stored in an enclosure such that sediment laden water does not drain into nearby storm water drains and underground sewage pipes. This practice shall be ensured especially Where drains and sewerage system is in place now.	M/o RT&H: 286	During Construction	Contractor	GC
	If the channel/drains get blocked due to negligence, contractor should ensure that they are cleaned especially during monsoon season. Once the work is completed in all respects, the Contractor shall as a mark of good gesture, clean up the drains along the project road to the extent possible.	M/o RT&H: 286	During Construction	Contractor	GC
Construction of new roadside drains	Roadside drains have been proposed in full sections in the DPR to improve the drainage. The drains shall be cleared off all construction debris before handing over to MMRC.	M/o RT&H: 286 M/o RT&H: 289	During Construction	Contractor	GC
Soil Erosion	On road embankments, slopes shall be stabilized. The work shall consist of measures as per design, or as directed by the PMC to control soil erosion, sedimentation and water pollution.	M/o RT&H: 286	During Construction	Contractor	GC
Siltation of water bodies	Siltation of soil into water bodies shall be prevented as far as possible by adopting soil	M/o RT&H Guidelines	During Construction	Contractor	GC

Environmental Issue	*Mitigation Measures*	*Cross Reference to Documents*	*Time Frame*	*Responsibility*	
				Implementation	*Supervision*
	erosion control measures as per M/O RT&H guidelines / or as per the directions of PMC	285 through 289			
Foundation excavation debris	Bentonite slurry or similar debris generated from pile driving or other construction activities shall be disposed such that it does not flow into surface water bodies or form mud puddles in the area.	M/o RT&H : 286, 1100	During Construction	Contractor	GC
Work during monsoon near water bodies	Construction work at sections close to water bodies shall be avoided during monsoon or completed before monsoon.	M/o RT&H : 286	During Construction	Contractor	GC
Areas susceptible to erosion	In areas susceptible to soil erosion, especially at various steep gradient locations, earthwork should be preferably carried out before rainy season or temporary/ permanent erosion protection work as may be feasible shall be provided.	M/o RT&H: 286	During Construction	Contractor	GC
Inspection of site	Daily inspection at construction site should be carried out to ensure removal of construction debris	M/o RT&H 281.3	During Construction Phase	Contractor	GC
Earthwork debris disposal	As soon as construction is over the surplus earth should be utilized to fill up low-lying areas as directed by the Employer, In no case, loose earth should be allowed to pile up along alignment.	M/o RT&H 281.3	During Construction Phase	Contractor	GC
Debris Disposal	Debris generated due to dismantling of existing pavement/structures shall be suitably reused in proposed construction. Un-utilisable debris shall be suitably disposed at the site identified in the DPR or at locations approved by MMRC. Good disposal practices recommended by various agencies/authorities shall be followed.	M/o RT&H 281.3 BOQ : 2.11	During Construction	Contractor	GC
Soil contamination by construction wastes, fuel etc.	Oil and fuel spills from construction equipment shall be minimized by good O & M practice. Soils contaminated by such spills shall be disposed as per MoEF requirements.	Project requirement	During Construction	Contractor	GC
Sourcing Quarry materials	Sand, aggregates and other quarry material shall be sourced from licensed quarries. DPR Has identified few quarries viz., Dahisar, Turbhe in the region for sourcing the material	M/o RT&H 111.3	During Construction	Contractor	GC
Aesthetics and Landscape	Adequate landscaping of the median, embankment slopes and other open space available within ROW shall be carried MMRC. The area can be utilised for growing dwarf	Project Requirement BOQ Item 10.2 to 10.6	During fag end of construction phase or within 6 months after	Contractor	GC

Environmental Issue	*Mitigation Measures*	*Cross Reference to Documents*	*Time Frame*	*Responsibility*	
				Implementation	*Supervision*
	varieties of plants (e.g. Alstonia Scholaris, Thuja etc).		operation starts and before monsoon		
Providing labour camps and facilities	The Contractor shall abide by the Contract conditions and directions of MMRC with respect to siting of labour camps, providing sanitation facilities & labour welfare issues etc.	M/o RT&H 105.2 PC Sub Clause 34.2	During Construction	Contractor	GC
Occupational Health and Safety	The Contractor is required to comply with all the precautions as required for the safety of workmen as per the International Labour Organisation (ILO) convention No. 62 as far as those are applicable to the Contract.	M/o RT&H 105.2 PC Sub Clause 34.2	During Construction	Contractor	GC
Provision of Safety accessories/ appliances to each worker	The Contractor shall supply all necessary safety appliances such as safety goggles, helmets, safety belts, ear plugs, maks etc. to the worker and staff.	M/o RT&H 105.2 PC Sub clause 34.2; PC Sub Clause 80	During Construction	Contractor	GC
Safety Precautions	Adequate precautions shall be taken to prevent danger from electrical equipment. All machines / equipment used shall confirm to the relevant Indian standards (IS) codes and shall be regularly inspected by the PMC.	PC Sub clause 34.2; PC Sub Clause 80	During Construction	Contractor	GC
Availability of first aid kit at construction site	A readily available first aid unit including an adequate supply of sterilized dressing material and appliances shall be provided as per the requirement under the Factory Act.	M/o RT&H 105.2 PC Sub Clause 34.2; PC Sub Clause 80	During Construction	Contractor	GC
Workers health and hygiene	All anti-malarial measures as prescribed by the PMC shall be complied with, including filling up of burrow pits.	M/o RT&H 105.2 PC Sub Clause 34.2	During Construction	Contractor	GC

Note: *MMRC/PIA – Mumbai Metro Rail Corporation Limited/ Project Implementing Authority; PMC – Project Management Consultant; MMRDA – Mumbai Metropolitan Region Development Authority, M/o RT&H – Ministry of Road Transportation and Highways (formerly Ministry of Surface Transport, MOST Specifications for Road and Bridge Works, 3rd Revision, 1997); RAP – Rehabilitation Action Plan; R & R – Resettlement & Rehabilitation; CEMP – Community Environmental Management Plan; MCGM – Municipal Corporation of Greater Mumbai; DG Sets – Diesel Generator set; ROW – Right of Way; PROW – Proposed Right of Way; O & M – Operation and Maintenance; PC Sub-Clause – Particular Conditions of Contract; GC: General Consultant of MMRC.*

PROFORMA OF SCHEDULES

SCHEDULE `A'

All rates shall be quoted in the format provided and no other format is acceptable. The price bid has been given as a standard BOQ with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BOQ file, open it and complete the white coloured (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the File name. if the BOQ file is found to be modified by the bidder, the bid will be rejected and EMD shall be forfeited.

SCHEDULE `B'

Schedule of materials to be issued to the contractor.

Sl. No.	Description of Item	Quantity	Rates in figures & words at which the material will be charged to the contractor	Place of Issue
1	2	3	4	5
Not Applicable				

SCHEDULE `C'

Tools and plants to be hired to the contractor.

Sl.No.	Description	Hire charges per day	Place of Issue
1	2	3	4
Not Applicable			

SCHEDULE `D'

Extra schedule for specific requirements/ documents for the work, if any. -	:- Not Applicable

SCHEDULE `E'

Name of work	"Implementation of Multi Modal Integration Facilities at Six Underground Metro Stations viz. BKC, Bandra Colony, Santacruz, CSIA T1, Sahar & CSIA T2 of Mumbai Metro Line-3 project".
Estimated cost of work	Rs. 14,17,15,320/- (Excl. GST)
i Earnest Money	Rs. 14,17,153 /- (to be returned after receiving performance guarantee)
ii Performance Guarantee	5% of tendered value

iii Security deposit:	:- NIL.

SCHEDULE `F'

GENERAL RULES & DIRECTION

Officer inviting tender	: Dy. General Manager (Civil)
Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses 12.2 & 12.3	a: 15% (Overall)

Definitions:

2(v)	Engineer-in-Charge	:	Deputy General Manager (Civil)
2(viii)	Accepting Authority	:	Director (Planning)
2(x)	Percentage on cost materials & Labour to cover all overheads & Profits (For Extra Item)	:	15%
2(xi)	Standard schedule of rates	:	MCGM 2023, PWD 2022-23, CPWD 2023
2(xii)	Department	:	Planning, MMRCL
9(2)	Standard contract Form GCC 2023, Form 7 as modified & corrected up to	:	16.08.2024

Clause 1

(i)	Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance	:	14 days
(ii)	Maximum allowable period of extension	:	14 days

Clause 2

Authority for fixing compensation under Clause 2	As per MMRC's guidelines

Clause 2A

Whether Clause 2A shall be applicable	No

Clause 5

Number of days from the date of issue of letter of acceptance for reckoning date of start	14 days or as per direction of Employer

Mile Stone(s) as per table

Mile stone No.	Total works to be completed (Financial)	Period from the Commencement / Completion Date	Compensation per Day in Rupees for shortfall in progress till progress is achieved
1	Completion of 15 % of overall progress	25 days	0.05 % of Contract Value
2	Completion of 50 % of overall progress	50 days	0.10 % of Contract Value
3	Completion of 100 % of all items	100 days	0.20 % of Contract Value
4	Defects Liability Period (From the date of successful completion of works where sectional completion certificate is issued.)	24 months for footpath and 24 months for other remaining works.	-

Time allowed for execution of work.	:	100 days

Authority to decide:

i.Extension of time	Director (Planning).
ii.Rescheduling of milestone	Director (Planning)
iii.Shifting of date of start in case of delay in handing over of site	Director (Planning)

Clause 6, 6A

Clause applicable – (6 or 6A)	:	6A (Computerized Billing)

Clause 7

Gross work to be done together with net payment/adjustment of advances for material collected, if any since the last such payment for being eligible to interim payment.	Rs. 20.00 Lakhs
Clause 7A	
Whether clause 7A shall be applicable	No
Clause 8A	
Authority to decide compensation on account if contractor fails to submit completion plans	Director (Planning)

Clause 10A

Testing equipment to be provided by the contractor at site lab

All the Testing equipment required for conducting test as per site requirement as applicable.

Clause 10 B(II)

Whether Clause 10B(II) shall be applicable (Mobilization Advance)	Yes

Clause 10C: **Not Applicable**

Component of labour expressed as percent of value of work	: N/A

Clause 10 CA :- Not applicable

Materials covered under this clause	**Nearest Material (other than cement*, reinforcement bars,structural steel & Bitumen) for which All India Wholesale Price index is to be followed**	**Base price and its corresponding period of all the materials covered under clause 10CA**
1. Cement (OPC/ PPC)		Base price for cement and reinforcement steel to be determined as issued under authority of State PWD or concerned Zonal Chief Engineer, PWD as on last date of

2. Reinforcement steel bars (TMT)		receipt of tender including extension if any. In case base price for cement, reinforcement bars and structural steel as to be issued.
3. Structural Steel		
4. Bitumen		Base price for bitumen shall be taken as basic price + excise duty issued at nearest delivery point of Govt. Refinery at the time of last date of receipt of tender including extension if any.

Clause 10 CC

Clause 10CC to be applicable in contracts with stipulated period of completion exceeding the period shown in next column	**Not applicable**

Clause 11

Specification to be followed for execution of work	a) BOQ, Technical specification. b) Manufacturer's Specification.

Clause 12

	Authority to decide deviation upto 1.5 time of tendered amount	Director (Planning)
12.2 & 12.3	Deviation limit beyond which clauses 12.2 & 12.3 shall apply for building, pavements and all other works above foundation level.	28% (Thirty Percent)
12.5	Deviation limit beyond which clauses 12.2 & 12.3 shall apply for foundation work	100% (Hundred Percent)

Clause 13

Competent Authority for deciding reduced rates	Director (Planning)

Clause 14

Mandatory machinery, tools & plants to be deployed by the contractor at site:

To be provided as per NIT and other Machinery required for timely completion of work.

Clause 15

Place of Arbitration :	**MMRC, Mumbai**

Clause 16

Requirement of Technical Representative(s) and recovery rate:

Sr. no.	Key Personnel			Rate of Recovery in case of non-compliance
	Discipline	Quantity	Experience	
1	Project Manager	01 No.	15 years	Rs. 60,000/- P.M.
2	Resident Engineer	02 No.	10 Years	Rs. 40,000/- P.M.
3	Site Engineer	04 No.	03/05 Years	Rs. 28,000/- P.M.
4	Safety Engineer	01 No	06 years	Rs 28,000/-P.M
5	Quality Engineer	01 No	06 years	Rs 28,000/-P.M

The Project Manager shall have at least fifteen (15) years relevant experience, including experience as a Main Contractor's Project Manager. The proposed Project Manager shall hold a University Degree acceptable to the Engineer or an equivalent qualification, in civil engineering or in a branch of civil engineering appropriate to the nature of the work included in the Contract.

The Resident Engineer shall hold a University degree in civil engineering or equivalent acceptable to the Engineer, with a minimum of ten (10) years relevant experience on similar size and type of construction projects, which shall have included work with the major trades expected in this Contract.

The Site Engineer shall hold a University degree or Diploma in civil engineering or equivalent acceptable to the Engineer, with a minimum of Three (3) or five (5) years relevant experience on similar size and type of construction projects, which shall have included work with the major trades expected in this Contract.

The Quality/Safety Engineer shall hold a University degree in civil engineering or equivalent acceptable to the Engineer, with a minimum of six (6) years relevant experience on similar size and type of construction projects, which shall have included work with the major trades expected in this Contract.

APPROVED LIST OF PREFERRED MAKES

Sr. No.	Description of material	Proposed Brands/ makes/ Manufacturers	Remarks
1.	Cement (20)	ACC Ltd.	Preference shall be given to makes/ brands manufactured near the vicinity of site of work having production capacity not less than One Million tonnes per annum.
		Ultra Tech	
		Shree Cement	
		Ambuja	
		Jaypee	
		Century	
		J.K. Laxmi / J K Cement	
		Lafarge	
		Dalmiya Cement Ltd.	
		Birla A1 (Orient Cement Ltd)	
		Star Cement	
		PENNA	
		Max Cement	
		Ramco Cement	
		Chettinad Cement	
		Wonder	
		Emami Cement	
		JSW Cement	
		Zuari Cement	
		OR any other reputed cement manufacturers having a production capacity not less than one Million tonnes per annum as approved by ED (Engg) for CHQ schemes / GM (Engg) for RHQ schemes.	
2.	Admixtures / Water Proofing Compound /Liquid membrane / Self-adhesive membrane (18)	Pidilite Industries Ltd.	
		FOSROC Chemicals (India) Pvt. Ltd.	
		CICO Technologies Ltd	
		Sika India Pvt. Ltd.	
		BASF India Ltd	
		MC Bauchemie	
		ArdexEndura (India) Pvt. Ltd.	
		STP Ltd.	
		Choksey Chemicals Pvt. Ltd.	
		MYK Laticrete / Laticrete	
		Mapei	
		Chryso India Pvt. Ltd.	
		Maruti Bitumen Pvt Ltd.	

		Penetron India Pvt. Ltd.	
		Supreme Bituchem India Pvt. Ltd.	
		Asian Paints Ltd.	
		IWL India Ltd.	
		TP BuildtechPvt.ltd.	
3.	Bipolar Corrosion Inhibitor Admixture (5)	STP Ltd.	
		Sika India Pvt. Ltd.	
		BASF India Ltd	
		Chryso India Pvt. Ltd.	
		Supreme Bituchem India Pvt. Ltd.	
4.	TMT Reinforcement Steel (6)	SAIL	
		RINL (VIZAG Steel)	
		TATA Steel	
		JSW Steel Ltd./JSPL	
		Shyam Steel Industries Ltd.	For RCC work component costing uptoRs. 15 crores only.
		Electrosteel Steels Ltd.	
5.	Reinforcement Coupler (4)	Dextra	
		G-Tech	
		Hi Tech Engineering Solutions	
		Sanfield (India) Ltd.	
11.	Structural Steel - MS Tubular Section (Circular, Square, Rectangular) for Columns, Truss, MS Pipes, Flats, Angles, Beams, Channels, Strips etc. (10)	SAIL	
		RINL	
		TISCO (TATA Steel)	
		JSW Steel Ltd./JSPL	
		APL Apollo Tubes Ltd.	For works costing uptoRs. 15 crores only.
		Surya Roshni Ltd.	
		Nezone Tubes Ltd.	
		Jotindra Steel & Tubes Ltd.	
		Utkarsh Tubes & Pipes Ltd.	
		Hi Tech Pipes LTd.	
12.	Fasteners (6)	Hilti	
		Fischer	
		BOSCH	
		Fasteners India	
		Mungo	
		Rawl Plug	
		Responsive Industries Pvt. Ltd.	
15.	Epoxy / PU Flooring (10)	STP Ltd.	
		Sika India Pvt. Ltd.	
		BASF India Ltd.	

		FOSROC Chemicals (India) Pvt. Ltd.	
		Flowcrete India Pvt. Ltd.	
		Cipy Polyurethanes Pvt. Ltd.	
		NITCO Tiles Corp.	
		Maruti Bitumen Pvt. Ltd.	
		Supreme Bituchem India Pvt. Ltd.	
		Chryso India Pvt. Ltd.	
16.	Tile Joint Filler, Tile / AAC Block/ Stone fixing adhesive / Solid epoxy grout (8)	ArdexEndura (India) Pvt. Ltd.	
		Ferrouscrete India Pvt. Ltd.	
		MYK Laticrete/ Laticrete	
		Pidilite Industries Ltd.	
		FOSROC Chemicals (India) Pvt. Ltd.	
		BASF India Ltd	
		Fairmate	
		STP Ltd.	
17.	Floor Hardener (9)	STP Ltd.	
		Sika India Pvt. Ltd.	
		BASF India Ltd	
		Pidilite Industries Ltd.	
		FOSROC Chemicals (India) Pvt. Ltd.	
		Ironite	
		Mapei	
		Chryso India Pvt. Ltd.	
		Supreme Bituchem India Pvt. Ltd.	
18.	Aluminium Standing Seam Roofing Sheet (Top & Bottom) (3)	KALZIP	No processor / installer to be added.
		Kingspan	
		Bemo Systems GmbH	
19.	Poly Carbonate Sheet (7)	Lexan	
		Dan Pal	
		Polygal India Pvt. Ltd.	
		Sabic (GE Plastics)	
		Gallina India Pvt. Ltd.	
		Coxwell Domes	
		Tuflite	
20.	Calcium Silicate / Mineral Fiber False Ceiling Tiles/ Gypsum False Ceiling Boards /Partition Boards (12)	Saint GobainGyproc India Ltd.	
		Lloyd Insulations India Ltd.	
		Armstrong World Industries (India) Ltd.	
		Aerolite Ceiling Systems	
		USG Boral (Formerly Boral Gypsum)	
		Hilux	
		Gridline	

		Everest	
		Dexune	
		Knauf AMF India Pvt. Ltd.	
		Vans Gypsum	
		New Age False Ceiling Pvt. Ltd.	
24.	Galvalume / Steel Sheet roofing (Top & Bottom) over M.S Structure (3)	Tata Bluescope Steel Ltd.	No processor/ installer to be added.
		Jindal Steel	
		Dongbu steel Co. Ltd. (Korea)	
25.	Paints for steel structure (Epoxy paint) / PU Paint/ Water Proof Cement Paint/Primer/ Distemper/ Texture finish paint / Synthetic Enamel Paint / Fire Retardant Paint (10)	Akzo Nobel India Pvt. Ltd.	
		Jenson & Nicholson	
		Oikos India Pvt. Ltd.	
		Asian Paints Ltd.	
		Berger Paints	
		Nerolac	
		Acro Paints Ltd.	
		Snowcem India Ltd.	
		Shallimar	
		Jotun	
29.	Runway marking paint (water based) (5)	Nerolac	
		Berger Paints	
		Asian Paints Ltd.	
		ITS Coatings Pvt. Ltd.	
		Supreme Bituchem India Pvt. Ltd.	
40.	CI Manhole Covers & CI Grating (9)	NECO	
		BIC	
		RIF	
		Electro Steel Castings Ltd.	
		SKF	
		Kesoram	
		Kapilansh	
		Kartar	
		Heepco	
41.	HDPE Pipes (6)	Geberit	
		Saint Gobain	
		Savoir Faire Manufacturing Co. Ltd.	
		Jain Irrigation	
		Ori –Plast	
55.	Walkways / Fall Protection system (7)	WULMET	
		Latchways	
		Capital Safety	
		Honeywell	

		Kartosar	
		Checkmate	
		Karam	
59.	Curing Compound (Resin based & Was based) (4)	FOSROC Chemicals (India) Pvt. Ltd.	
		Sika India Pvt. Ltd.	
		BASF India Ltd.	
		Supreme Bituchem India Pvt. Ltd.	
60.	Decorative Films / Safety Films (3)	3M	
		Avery Dennison	
		Deck	
61.	Steel Nano coat (3)	Four Solution Pvt. Ltd.	This product can be considered for steel structures directly exposed to harsh environment.
		Meta-Chem Paints & Adhesives Pvt. Ltd.	
		Advanced lab.	
Incase, the material used is not in the list, the Contractor has to take necessary approval from the Engineer-in-Charge/Employer			

IMPLEMENTATION OF MULTI MODAL INTEGRATION IN STATIONS OF MUMBAI METRO LINE 3			
PRICE SCHEDULE ABSTRACT			
SCHEDULE - B			
SCHEDULE	**DESCRIPTION**	**AMOUNT**	**(In INR)**
B1	CSMIA T2 Metro Station		1,91,25,481.37
B2	Sahar Road Metro Station		4,06,70,534.08
B3	CSMIA T1 Metro Station		2,60,05,089.03
B4	Santacruz Metro Station		2,12,55,483.12
B5	Bandra Colony Metro Station		1,80,46,159.64
B6	BKC Metro Station		1,66,12,572.30
	Total Amount		**14,17,15,319.55**

MULTI MODAL INTEGRATION FOR STATIONS ON MUMBAI METRO LINE 3								
NAME OF STATION:- ALL STATION								
SCHEDULE B								
ABSTRACT								
COST CENTRE	**DESCRIPTION**	**CSMIA T2 SCH-B1**	**SAHAR RD SCH-B2**	**CSMIA T1 SCH-B3**	**SANTACRUZ SCH-B4**	**BANDRA COLONY SCH-B5**	**BKC SCH-B6**	**TOTAL**
A	Excavation and Dismantling	3,97,983.73	11,59,496.24	5,53,330.35	9,89,201.09	10,43,627.04	3,88,152.37	45,31,790.83
B	Storm Water Drain	18,58,712.00	28,99,094.00	14,63,095.00	30,57,106.00	13,26,804.00	16,65,437.00	1,22,70,248.00
C	Footpath,Paver Block and Kerbstone	47,68,514.48	1,07,65,724.74	53,64,905.88	54,51,611.49	33,22,826.50	23,99,844.04	3,20,73,427.14
D	Lane Marking	-	-	-	-	-	-	-
E	Street Furniture	87,78,466.00	1,67,22,258.00	1,45,22,566.00	66,32,944.00	89,81,424.20	81,95,974.00	6,38,33,632.20
F	Signages	7,28,201.00	15,42,563.80	6,65,856.40	7,49,589.60	8,62,802.00	8,53,320.40	54,02,333.20
G	Barricading during construction	2,71,000.00	2,71,000.00	2,71,000.00	2,71,000.00	2,71,000.00	2,71,000.00	16,26,000.00
H	Ramps	2,59,660.17	19,73,932.29	1,74,720.40	4,22,412.94	4,03,161.14	1,85,204.49	34,19,091.42
I	Street Light	-	-	-	-	4,44,579.62	-	4,44,579.62
J	Miscellaneous	20,62,944.00	53,36,465.00	29,89,615.00	36,81,618.00	13,89,935.15	26,53,640.00	1,81,14,217.15
	Total Amount	**1,91,25,481.37**	**4,06,70,534.08**	**2,60,05,089.03**	**2,12,55,483.12**	**1,80,46,159.64**	**1,66,12,572.30**	**14,17,15,319.55**

Note-1. Reference mentioned As per relevant to MCGM/PWD/CPWD & MoRT&H Specification

2. Approach road,Casting of drain and laying of related utilities are not considered in BOQ,should be considered in station development activities.

MULTI MODAL INTEGRATION FOR STATIONS ON MUMBAI METRO LINE 3						
NAME OF STATION:- CSMIA T2						
SCHEDULE B-1						
BOQ / SOR						
SR. NO.	Refference	ITEM DESCRIPTION	UNIT	RATE	FINAL QTY	AMOUNT
Cost Centre A: Excavation and Dismantling						
1	MCGM USOR R3-RW-4-03	Removing existing kerb stones, cleaning off old mortar, carting away up to a distance of 2 K.M. and stacking the same as directed.	RMT	42.00	652.71	27413.82
2	MCGM USOR R3-RW-3-22	Removing the paver blocks of any thickness.,size,& colour from carriage way OR footpath & transporting the same to ward depot OR any where in MCGM limit. The paver blocks shall be stacked neatly at specified location etc. complete as specified and as directed by the Engineer.	SQM	193.00	1319.65	254692.45
3	PWD-2.11 MORTH 301	Excavation for roadway in earth, soil of all sorts, sand, gravel or soft murum including dressing section to the required grade, camber and side slopes and conveying the excavated materials with all lifts upto a lead of 50m. and spreading for embankment or stacking as directed.	CUM	75.60	197.948	14964.8688
4	MCGM BLDG R3-CS-DD-53	Disposal of building rubbish / malba / similar unserviceable,dismantled or waste materials by mechanical means including loading,transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all loads including all lifts involved.	CUM	109.00	197.948	21576.332
5	MCGM USOR R3-RW-7-01	Removing & refixing traffic regulatory boards/busstop boards/street name boards etc. in M-10 cement concrete, complete as directed.	EA	1017.00	12	12204
6	MCGM USOR R3-SWD-35	Cutting down existing cement / lime concrete works by any means in pavement, bedding below foundation, coping, walls arches, stone, brick pavement coping etc. of any thickness of any height / depth above or below ground level etc. complete, as specified & as directed by Engineer in- Charge.	CUM	1703.00	39.42	67132.26
				Sub Total		397983.7308
Cost centre B: Storm Water Drains						
7	MCGM USOR R3-RW-6-03	Raising or lowering circular manholes to the required level upto 20 cm including all material, form work etc. with 16 cm thick cement concrete M-15 (1:2:4) coping under frame and cover of manhole, including curing etc. complete as specified and as directed	EA	1435.00	5	7175
8	MCGM USOR R3-RW-6-05	Raising or lowering rectangular manholes to the required level upto 30 cm including all materials, form work, brick work and with 16 cm thick M-15 cement concrete coping under frame & cover of manhole including curing etc. complete, as specified and as directed.	EA	2803.00	167	468101
9	MCGM USOR R3-SWD-74	Providing and laying 300 mm dia NP2 Class R.C.C. Hume pipes with Collar joints conforming to IS 458:2003 and laid on approved bedding as per IS 783:1985 (Reaff. 2010) including jointing the pipes and filleting with hemp and stiff mix of cement mortar 1:2, including testing of pipes at contractor's costs (in presence of munipal staff) as per IS 3597 etc. complete as specified & as directed by Engineer-in-Charge.	MTR	964.00	200	192800
10	MCGM USOR R3-SWD-183	Supplying and fixing 1.20m x 0.90m (2 nos of 0.60m x 0.90m) internal size rectangular D.I. air-tight hinged type cover and frame (weighing minimum 300 kg.) of material grade SG-500/7 as per IS 1865-1991with grade designation of C250 as per EN 124, specification no 3, including testing and inspection as per guidelines of IS specifications, including fixing with M-30 concrete and locking arrangement etc. complete as specified and as directed by Engineer-in-Charge.	NOS	57686.00	18	1038348
11	MCGM USOR R3-SWD-119	Providing and Constructing brick masonry inspection chamber rectangular 0.9 M x 0.60 M and 0.6 m deep on sewer with 230 mm brick walls in cement mortar 1:3 plastered both inside & outside with 20 mm thick cement mortar 1:2 and neat cement rendering so as to give a smooth surface, including 230 mm. cement concrete bedding (M 15) and cement concrete (M 15) in haunches and channels finished smooth with 20 mm thick cement mortar (1:1) and fixing C.I. heavy duty rectangular frame and cover of size 0.90 m x 0.45 m weighing minimum 270 kg. resting on 300 mm high C.C. cap in M 20 with (1:1) with cement plaster on both sides and necessary C.I. steps (weighing 5.40 kg each) staggered at 300 mm c /c including 75 mm wide vata all around the external portion of the chamber and the foundation concrete in C.M. 1: 1 etc. complete as per plan in and as per drawing (Dwg No MCGM/SWD/2013-03),etc complete as specified & as directed by Engineer-in-Charge.	EA	42303.00	2	84606
12	MCGM USOR R3-SWD-148	Supplying and fixing 0.90m x 0.60m internal size of rectangular C.I. air-tight cover and frame weighing minmum 270 of material grade of min. FG 150 conforming to IS 210:2009 and specification no SP-SWD-3 with the grade designation of HD 20 conforming to IS 1726:1991including testing as per CL 10 .	EA	33841.00	2	67682
				Sub Total		1858712

Cost centre C: Footpaths, Paver Blocks & Kerbstones						
13	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210).	CUM	2702.00	301.14	813680.28
14	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer.	SQM	908.00	2252.77	2045515.16
15	MCGM USOR R3-RW-10-54	Providing and fixing of the precast kerb stone of height 325mm., base width 165mm., top width 115mm.in M20grade RMC supplied through MCGM approved plant or concrete mixed with use of weigh batch mixers as detailed in drawing u/No.Dy.Ch.E./Rds/93 /E.S. of 17 / 8 / 2005 ,excavation in any soil except rock, laying a leveling course of M 15 grade RMC 100mm. thick, to required slope (inclusive of form work) jointing in C.M.1:2 proportion flush to concrete surface, painting exposed surface with one coat of primer and two coats of 1st grade road marking paint in the yellow/white/black or any shade as directed. (Kerbstones shall be procurred from MCGM registered agencies).	MTR	549.00	0	0
16	CPWD-DAR-2019-16.90	Providing and laying tactile tile (for vision impaired persons as per standards) of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS:15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.	SQM	1933.75	648.09	1253244.038
17	MCGM USOR R3-RW-10-45	Providing and fixing of Water Dished Channel size : 600 x 300 x 80mm, M-40 grade manufactured in vacuum wet press technology plant with excellent finish and sharp edges inclusive of excavation in any soil except rock, laying of leveling course of M-15 grade RMC 100 mm thick to required slope (inclusive of form work) jointing in 1:2 C:M. prop. flush to concrete surfaces as directed (Watertables shall be procured from BMC registered agencies).	MTR	805.00	815	656075
				Sub Total		**4768514.478**
Cost Centre D: Lane Markings						
18	MCGM Traffic R3-RT-16-32	Providing and applying hot applied thermoplastic road marking material with glass beads extremely high skid resistance 2.5mm thick with primer coat (tack coat) for binding on cement concrete road/paver blocks surface. All labour materials with special aggregates etc, as specified in B.S. part-I & II 1989 and carrying out the marking on any road on center line and other lane marking continuous for intermittent 10cm or 15cm width and also pedestrian crossings stripes as well as spraying further quality of glass beads of type II uniformly into a mono layer on to the hot paint line in quick succession of the paint spraying operation @ 250gms per sq.mt. area as directed and as per B.S./M.O.S.T. specification in white/yellow colour	SQM	955.00	0	0
19	MCGM Traffic R3-RT-16-07	Arrow marking for Route direction straight or right or left or straight & right or straight or left & lettering as per design in white or traffic yellow as specified and directed for speed limit upto 50 km/hrs.	NOS	1668.00	0	0
20	PWD-6.12b MORTH 301	Providing and applying Cold plastic paint two component rolled on surfacing material solvent free, high build two pack seamless, tough, skidresistant, material with has property of attaining 2.00 mm thickness in single coat application white (or as required colour) based on glass and colour retaining acralic cross linking resin system for coloured road surfacing including surface cleaning and cost of all material etc. complete. (All inclusive on bitumen or concrete surface) work shall carried out as per IRC 35-2015 clause 2.2	SQM	1581.30	0	0
				Sub Total		**0**

Cost Centre E: Street Furniture						
21	MCGM Traffic R3-RT-16-14	Circular Steel Bollards : Providing, fabricating and fixing circular Steel Bollards of 100mm dia circular Steel Pipe (of type 3F-A-1) as per the design incorporated in the Catalogue of Street Furniture (Vol-II). Published by MCGM, made of 10 Guage, 304 quality material with minimum nickel content not less than 10% (laboratory testing certificate shall be provided for used material) with steel pedestal and steel cap as per designs (3F-A1), (3F-A1.1), (3FA1.2) and (3F-A1-3) suitable to match the design adopted for surrounding railing including cutting, welding, riveting, polishing. The foundation shall either be with base plate of 200 x 200 x 6mm thick, 16 mm dia J Bolts or embedding pipe in foundation by providing 20mm Dia x 6 nos holdfasts embedded in 1:2:4 concrete as shown in drawing (3F-A1.1). inclusive of making good the damage portion of footpath with matching pavers blocks, tiles removing debris etc. complete as per specifications and as directed by the Engineer.	NOS	19147.00	128	2450816
22	MCGM Garden GW-3-2-f	Ss Dust Bin (Refer sketch 10) Product area:0.76Sqm, Capacity in ltrs: 42.0 ltrs, Product height:0.92m	NOS	17265.00	0	0
23	MCGM Traffic R2-RT-16-06	Providing, fabrication and fixing Stainless Steel railing of 10 gauge of 304 grade stainless steel having minimum nickel content 10% (Laboratory testing certificate shall be provided for used material), dia. 40mm circular pipe railing with dia. 18mm circular intermediate support, dia. 65mm circular main supports with Stainless Steel pedestal(base-I type) and Stainless Steel cap (type- I) including cutting, welding, riveting, polishing as directed and fixing in cement concrete foundation as shown vide Sr.No. 2F-A1 in catalogue of Street Furniture (Vol.I) published by M.C.G.M. including removal of surplus material/debries and restoring damaged portion of footpath, etc. as directed.(with advertisement)	MTR	18079.00	350	6327650
				Sub Total		**8778466**
Cost Centre F: Signages						

24	MCGM Traffic R3-RT-16-27	Providing, Fabricating, Erecting on site Facility Sign Boards (Taxi Stand/Police Station/Petrol Pump/Hospital and any other utilities) as per drawing no Facility Sign Drawing F1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mmx800mm. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than 80% of its original reflection after 10 years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer.	NOS	17598.00	0	0
25	MCGM Traffic R3-RT-16-25	Mandatory Board (600mm dia) hanging on pole – Providing, Fabricating, Erecting on site Mandatory & Cautionary Boards (of type 1S-A-3). As per the design incorporated in Street Furniture catalogue volume–II published by M.C.G.M., Signage plaque (box) shall be of size 600mm dia. Mounted on existing electrical pole with GL clamp. The box shall be made of4mm thick fibre reinforced plastic box covering both sides of pole. The cirCUMferential edge shall be closed with 3 mm thick FRP. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years shown in the drawing complete as per specification and as directed by the Engineer.	NOS	9765.00	0	0
26	MCGM Traffic R3-RT-16-23	Providing, Fabricating, Erecting on site Mandatory Boards as per drawing no Mandatory Sign Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm dia. The box shall be pasted with micro prismatic grade retro reflective sheeting conforming to Type XI standards of IRC 67:2022. The retro reflective sheeting used on the signs shall consist of white sheeting having a smooth outer surface which has the property of retro reflection over its entire surface. It shall be weather resistant and exhibit colour fastness. A certificate of having the sheeting tested as per ASTM D 4956 from international and Govt. of India laboratory along with three years outdoor weathering to be submitted. The message (legends, letters, numerals, logos etc) along with the boards to be digitally printed on latex or equivalent platform using ink approved by the sheeting manufacturer conforming to UL 2801 and UL 2818. The digitally printed sheeting should be over laminated using UV clear overlay film. The retro reflective sheeting along with digital printing, ink and over laminate should be warranted for 10 years as per IRC 67 2022 clause 6.8 and 6.9. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. work complete as per specifications and as directed by the Engineer.	NOS	12624.00	10	126240
27	MCGM Traffic R3-RT-16-21	Providing, Fabricating, Erecting on site Direction Board as per figure no RT-16-21, Vertical poles shall be made of ISMC of 150x75 hot dip galvanised post, Signage plaque (box) shall be of size 1200mm x 1800mm made of hot dip galvanised ISMC 75mm x 40mm & bracing of 50x6mm hot dip galvanised channel. The sign board box shall be covered with4 mm aluminum composite panel on both sides of the box assembly & shall be fixed to the vertical pole. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical poles shall be fixed to the ground by means of properly designed foundation of size 750mm x 750mm x 900mm. Complete as per specification and direction by the Engineer. NOS 52403	NOS	79576.00	0	0

28	MCGM Traffic R3-RT-16-24	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 900mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	17030.00	0	0
29	MCGM Traffic R3-RT-16-43	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	14384.00	20	287680
30	MCGM Traffic FA-TR-07	Providing and Fixing Single Arrow Street Name Sign Board of size1600mm x 900mm made out of retro reflective sheeting of micro prismatic grade conforming to IRC-67:2012 & Type XI standards of ASTM D4956-09 specifications, fixed over 4mm thick ACP sheet supportedwith Back support frame of 25x25x3mm stainless steel angle of 304 grade, supported on a stainlesssteel pipe of 73.03 OD., 2.11 mm thk of 304 grade & surrounded by SS pipe of 38.10mm OD, 1.2 mm thkof 304 grade, firmly fixed to the ground by means of properly designed foundation with M20 gradecement concrete 45 cm X 45 cm X 60 cm , 60 cm below ground level as per approved drawing. Themessages (Legends , letter , numerals etc) and borders shall either be screen printed or of cut outfrom durable Transparent overlay film or cut out from same type of reflective sheeting as per TypeXI standards. Specification: as per IRC 67:2012. 10 years Warranty for Retro Reflective Sheetingfrom the original sheeting manufacturer & a certified copy of three years outdoor exposure reportfrom an independent test lab for the product offered shall be submitted by the contractor . (Bottomof the board shall be 900mm above ground level) Specification: IRC 67:2012.There shall be a stampbehind the ACP sheet carrying the name of the supplier, Name of sheeting Manufacturer, Type of retroreflective sheeting, Installation month & year as per clause 12.2 of IRC 67-2012.	NOS	32971.40	5	164857
31	MCGM Traffic FA-TR-13	Providing, Fabricating, Erecting on site Stop Sign Boards as per drawing no F2,Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box)shall be of size 600mm Octagon with red background & white lettering. The box shall be made of Hotdip galvanised MS angles of 25x25x3mm thick covered with 3 mm thick aluminum composite panel on bothsides of the box assembly; shall be fixed to the vertical pole. The box shall be fabricated bycovering the gap between the signs using 73mmx3mm thick hot dip galvanised MS plate all round theboard. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sidesconforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this boxusing transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall havewarranty of 10 years. The refection count shall not be less than 80% of its original reflectionafter 10 years. The vertical pipw shall be fixed to the ground by means of properly designedfoundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as perthe specification and directed by the Engineer	NOS	12452.00	12	149424

32	MCGM Traffic FA-TR-14	Providing, Fabricating, Erecting on site Toilet Indication Sign Boards as per drawingno F2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque(box) shall be of size 1050mmx600mm with fluorescent background & 300mm circle above the toiletsign'. The box shall be made of Hot dip galvanised MS angles of 25x25x3mm thick covered with 4 mmthick aluminum composite panel on both sides of the box assembly; shall be fixed to the verticalpole. The box shall be fabricated by covering the gap between the signs using 73mmx3mm thick hot dipgalvanised MS plate all round the board. The box shall be pasted with MICRO PRISMATIC GRADE retroreflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Lettersor borders to be pasted on this box using transparent electro cuttable film/Screen Printing. Thereflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than80% of its original reflection after 10 years. The vertical pipw shall be fixed to the ground bymeans of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mmabove ground. Complete as per the specification and directed by the Engineer.	NOS	12063.70	0	0
				Sub Total		**728201**

Cost Centre G: Barricading during time of construction						
33	MCGM USOR R3-RW-7-36	Barricading the trenches on traffic flow side with 1.60 mtr. Height M.S.Angle post of 50 x 50 x 5 mm. buried in half the depth in drum of 20 ltrs. Capacit by 1:3:6 concrete spaced at 2.25 m centre to centre with 22 guage G.I. corrugated sheet of size 2.40 x 0.75 m. bolted to the M.S. Angle post and painted in yellow and black band with synthetic enamel paint as per traffic norms and as directed by the Engineers.	MTR	271.00	1000	271000
				Sub Total		**271000**
Cost Centre H: Ramps						
34	MCGM USOR R3-RW-10-29	Providing & laying M-40 C.C.avg. compressive strength (As per IRC 15-2002.N.1.6) procured from B.M.C. approved R.M.C. plant including use of approved make of plasticizer/ retarder & Contractor's water with ice flakes (if required) and transported by transit mixer and placing at work site. Compacting, finishing, initial curing by approved curing compound & Contractor's water and tarring the sides of slab with hot bitumen as specified and directed (w/c ratio 0.4 maximum)(vata for curring will be paid separately.) (MINIMUM CEMENT CONTENT 350 kg/m³	CUM	7962.00	0	0
35	MCGM USOR R3-RW-3-32	Providing & fixing in the carriageway, 80 mm thick Heritage paver interlocking white cement concrete pavers in red (Terra Cotta) Black, Brown lamen colour with vermeticular or any antiskid texture on top surface of approved pattern/ shape and colour having average crushing strength 50 N/mm² manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thick and consist cubical shape stone aggregate 8 mm sieve 100% passing and retain on 4.75 mm size sieve , silica sand and with pure iron oxide ultra voilete stabilized pigment @ 5% by weight of cement . The bottom layer should be 65 to 68 mm thick in gray cement having 12 mm sieve 100% passing aggregate as per technical specification rested on average 25 mm compacted thickness of uniformly graded river sand cushioning, compacted by proper capacity mechanical compactor with proper level grade and camber etc. complete as specified and as directed by the Engineer.	SQM	977.00	81.4	79527.8
36	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210). (For Tabletop)	CUM	2702.00	26.8575	72568.965
37	MCGM USOR R3-RT-15-11	Fixing c.c tapered kerbs of type -2 as per Drg. EET&C/Gen/013/03Ty dt 11.12.03(Revised on 15.06.2006) available on site in C.M 1:2 painting the exposed surface of the kerbs with road marking paint grade-I (confirming to IS- 164) in two coats of approved colour including excavation (For Tabletop) in any material except rock / concrete road and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by	MTR	476.00	39.7	18897.2
38	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer.	SQM	908.00	97.65	88666.2
				Sub Total		**259660.165**

Cost Centre J: Miscelenous						
39	R3-RT-16-34	Supplying/ fixing of Two Way Raised Pavement Markers made of polycarbonate moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 13635 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 – DO III Dt 11.06. 1997 . The minimum reflective area of 13 Sq.Cm on each side and the slope to the base shall be 35 +/- 5 degree. Fixing will be without nails but by using epoxy resin based adhesive as per manufacturer's recommendation including site clearance etc and complete as directed by the engineer.'	MTR	433.00	1209	523497
40	R3-RT-16-36	Supplying/ fixing of Flexible Median Marker which shall be made of tough, high impact resistant, injection moulded, thermoplastic body with U shape structure with overall eight of minimum 180mm and shank depth of minimum 30mm and thickness not less than 2mm. The exposed body structure should be cornered rounded for better aesthetics. The outer part of the body shall have the Abrasion loss not less than 35 mm3 when tested accordance with DIN53505 and DIN53516 respectively and shall retain at least 70% of this value when it is subjected to accelerated weathering for 500hrs as per the ASTM G155 standard. The logo of the manufacturer shall be embossed on either side of the body in the injection moulding process. - The flexible median marker shall have U shaped florescent yellow colour retro-reflective sheeting with minimum exposed reflective area 285 mm2. The reflective sheeting should confirm to Type XI Florescent Yellow sheeting as per IRC 67 2022 and ASTM D4956-11.	NOS	437.00	0	0
41	R3-RW-7-18	Providing applying Yellow & Black road marking paint grade –I in 3-coats including single coat of approved brand primer after cleaning of old surface of any type divider with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	SQM	170.00	0	0
42	R3-RW-7-17	Providing applying Yellow & Black road marking paint grade –I in 3-coats including single coat of approved brand primer after cleaning of old surface of kerb stone with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	MTR	59.00	1084	63956
43	R3-RT-16-44	Providing and fixing rumblers of rubberised material	MTR	1472.00	513	755136
44	R3-ME-2-22-d	Supply & Laying of double wall corrugated (DWC) pipes of 90 mm OD / 76 mm I.D. HDPE for underground cable protection as per IS 14930 Part II. With necessary connecting socket/couplings, tees of some material at required depth up to 900 mm below road ground surface. backfilling of with light ramming is included in the scope.	MTR	291.00	300	87300
45	R3-RW-10-25	P/L R.M.C.M-20 C.C. procured from B.M.C. approved R.M.C. plant including use of approved makes of plasticizer/ retarder & transported by transit mixer & placing at worksite, compacting, finishing curing etc. by contractor's water & tarring the sides of form work with hot bitumen as specified & directed by the Engineer. (MINIMUM CEMENT CONTENT 260 Kg/m³.) (For Tree Bunds &	CUM	6489.00	15	97335
46	As per MMRDA Tender Document	Providing traffic wardens for regulation of traffic during construction as per the requirement of traffic police, etc. complete and as directed by Engineer-incharge.	NOS	300.00	180	54000
47	R3-RT-16-28	Circular treeguard:Providing, fabrication and fixing M.S.Circular treeguard with circular pipe of 10 gauge, 50mm Dia Circular vertica lpost ,40 mm Dia Horizontal support 18mm Dia. intermediate support with M.S. cap-(type-I) logo panel etc. including cutting welding, riveting, oil painting with navy blue colour or anyother approved colour shade as directed and fixing incement concrete foundation including cement concrete paver block lining including removal of surplus material/debris and restoring damaged portion of footpath etc. as directed. (Design details vide Drg.No.4F-A1.1, 4F- A1.2,A1.3 in the catalogue of street Furniture (Vol.I) published by B.M.C.)	NOS	19076.00	20	381520
48	R3-RW-10-33	Providing and fixing of the precast TREE GUARD KERB of M-20 C.C. of height 230mm, width 100mm, Length 400mm, finished neatly, compacting, curing, formwork etc. including bedding of M-10 C.C. procured from B.M.C. approved R.M.C. plant,10cm.thick, filling of jointing in C.M. 1:2 and painting the exposed surface with 3 coats of road marking paint, Grade I of approved colours and quality including single coat of approved brand primer including excavation in C.C, asphalt etc. as specified and as directed.	MTR	501.00	200	100200
					Sub Total	**2062944**
					GRAND TOTAL	**1,91,25,481.37**

MULTI MODAL INTEGRATION FOR STATIONS ON MUMBAI METRO LINE 3						
NAME OF STATION:- SAHAR ROAD						
SCHEDULE B-2						
BOQ / SOR						
SR. NO.	Refference	ITEM DESCRIPTION	UNIT	RATE	FINAL QTY	AMOUNT
Cost Centre A: Excavation and Dismantling						
1	MCGM USOR R3-RW-4-03	Removing existing kerb stones, cleaning off old mortar, carting away up to a distance of 2 K.M. and stacking the same as directed.	RMT	42.00	1588	66706.5
2	MCGM USOR R3-RW-3-22	Removing the paver blocks of any thickness.,size,& colour from carriage way OR footpath & transporting the same to ward depot OR any where in MCGM limit. The paver blocks shall be stacked neatly at specified location etc. complete as specified and as directed by the Engineer.	SQM	193.00	4785	923510.79
3	PWD-2.11 MORTH 301	Excavation for roadway in earth, soil of all sorts, sand, gravel or soft murum including dressing section to the required grade, camber and side slopes and conveying the excavated materials with all lifts upto a lead of 50m. and spreading for embankment or stacking as directed.	CUM	75.60	717.8	54262.278
4	MCGM BLDG R3-CS-DD-53	Disposal of building rubbish / malba / similar unserviceable,dismantled or waste materials by mechanical means including loading,transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all loads including all lifts involved.	CUM	109.00	717.8	78235.295
5	MCGM USOR R3-RW-7-01	Removing & refixing traffic regulatory boards/busstop boards/street name boards etc. in M-10 cement concrete, complete as directed.	EA	1017.00	22	22374
6	MCGM USOR R3-SWD-35	Cutting down existing cement / lime concrete works by any means in pavement, bedding below foundation, coping, walls arches, stone, brick pavement coping etc. of any thickness of any height / depth above or below ground level etc. complete, as specified & as directed	CUM	1703.00	8.46	14407.38
				Sub Total		1159496.243
Cost centre B: Storm Water Drains						
7	MCGM USOR R3-RW-6-03	Raising or lowering circular manholes to the required level upto 20 cm including all material, form work etc. with 16 cm thick cement concrete M-15 (1:2:4) coping under frame and cover of manhole, including curing etc. complete as specified and as directed	EA	1435.00	10	14350
8	MCGM USOR R3-RW-6-05	Raising or lowering rectangular manholes to the required level upto 30 cm including all materials, form work, brick work and with 16 cm thick M-15 cement concrete coping under frame & cover of manhole including curing etc. complete, as specified and as directed.	EA	2803.00	540	1513620
9	MCGM USOR R3-SWD-74	Providing and laying 300 mm dia NP2 Class R.C.C. Hume pipes with Collar joints conforming to IS 458:2003 and laid on approved bedding as per IS 783:1985 (Reaff. 2010) including jointing the pipes and filleting with hemp and stiff mix of cement mortar 1:2, including testing of pipes at contractor's costs (in presence of munipal staff) as per IS 3597 etc. complete as specified & as directed by Engineer-in-Charge.	MTR	964.00	350	337400
10	MCGM USOR R3-SWD-183	Supplying and fixing 1.20m x 0.90m (2 nos of 0.60m x 0.90m) internal size rectangular D.I. air-tight hinged type cover and frame (weighing minimum 300 kg.) of material grade SG-500/7 as per IS 1865-1991with grade designation of C250 as per EN 124, specification no 3, including testing and inspection as per guidelines of IS specifications, including fixing with M-30 concrete and locking arrangement etc. complete as specified and as directed by Engineer-in-Charge.	NOS	57686.00	10	576860

11	MCGM USOR R3-SWD-119	Providing and Constructing brick masonry inspection chamber rectangular 0.9 M x 0.60 M and 0.6 m deep on sewer with 230 mm brick walls in cement mortar 1:3 plastered both inside & outside with 20 mm thick cement mortar 1:2 and neat cement rendering so as to give a smooth surface, including 230 mm. cement concrete bedding (M 15) and cement concrete (M 15) in haunches and channels finished smooth with 20 mm thick cement mortar (1:1) and fixing C.I. heavy duty rectangular frame and cover of size 0.90 m x 0.45 m weighing minimum 270 kg. resting on 300 mm high C.C. cap in M 20 with (1:1) with cement plaster on both sides and necessary C.I. steps (weighing 5.40 kg each) staggered at 300 mm c /c including 75 mm wide vata all around the external portion of the chamber and the foundation concrete in C.M. 1: 1 etc. complete as per plan in and as per drawing (Dwg No MCGM/SWD/2013-03),etc complete as specified & as directed by Engineer-in-Charge.	EA	42303.00	6	253818
12	MCGM USOR R3-SWD-148	Supplying and fixing 0.90m x 0.60m internal size of rectangular C.I. air-tight cover and frame weighing minmum 270 of material grade of min. FG 150 conforming to IS 210:2009 and specification no SP-SWD-3 with the grade designation of HD 20 conforming to IS 1726:1991including testing as per CL 10 .	EA	33841.00	6	203046
				Sub Total		2899094

Cost Centre C: Footpaths, Paver Blocks & Kerbstones						
6	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210).	CUM	2702.00	718.7	1941970.632
7	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer.	SQM	908.00	5424	4925219
8	MCGM USOR R3-RW-10-54	Providing and fixing of the precast kerb stone of height 325mm., base width 165mm., top width 115mm.in M20grade RMC supplied through MCGM approved plant or concrete mixed with use of weigh batch mixers as detailed in drawing u/No.Dy.Ch.E./Rds/93 /E.S. of 17 / 8 / 2005 ,excavation in any soil except rock, laying a leveling course of M 15 grade RMC 100mm. thick, to required slope (inclusive of form work) jointing in C.M.1:2 proportion flush to concrete surface, painting exposed surface with one coat of primer and two coats of 1st grade road marking paint in the yellow/white/black or any shade as directed. (Kerbstones shall be procurred from MCGM registered agencies).	MTR	549.00	0	0
16	CPWD-DAR-2019-16.90	Providing and laying tactile tile (for vision impaired persons as per standards) of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS:15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.	SQM	1933.75	1183	2288535.113
17	MCGM USOR R3-RW-10-45	Providing and fixing of Water Dished Channel size : 600 x 300 x 80mm, M-40 grade manufactured in vacuum wet press technology plant with excellent finish and sharp edges inclusive of excavation in any soil except rock, laying of leveling course of M-15 grade RMC 100 mm thick to required slope (inclusive of form work) jointing in 1:2 C:M. prop. flush to concrete surfaces as directed (Watertables shall be procured from BMC registered agencies).	MTR	805.00	2000	1610000
					Sub Total	**10765724.74**

Cost Centre D: Lane Markings						
9	MCGM Traffic R3-RT-16-32	Providing and applying hot applied thermoplastic road marking material with glass beads extremely high skid resistance 2.5mm thick with primer coat (tack coat) for binding on cement concrete road/paver blocks surface. All labour materials with special aggregates etc, as specified in B.S. part-I & II 1989 and carrying out the marking on any road on center line and other lane marking continuous for intermittent 10cm or 15cm width and also pedestrian crossings stripes as well as spraying further quality of glass beads of type II uniformly into a mono layer on to the hot paint line in quick succession of the paint spraying operation @ 250gms per sq.mt. area as directed and as per B.S./M.O.S.T. specification in white/yellow colour	SQM	955.00	0	0
10	MCGM Traffic R3-RT-16-07	Arrow marking for Route direction straight or right or left or straight & right or straight or left & lettering as per design in white or traffic yellow as specified and directed for speed limit upto 50 km/hrs.	NOS	1668.00	0	0
20	PWD-6.12b MORTH 301	Providing and applying Cold plastic paint two component rolled on surfacing material solvent free, high build two pack seamless, tough, skidresistant, material with has property of attaining 2.00 mm thickness in single coat application white (or as required colour) based on glass and colour retaining acralic cross linking resin system for coloured road surfacing including surface cleaning and cost of all material etc. complete. (All inclusive on bitumen or concrete surface) work shall carried out as per IRC 35-2015 clause 2.2	SQM	1581.30	0	0
				Sub Total		**0**
Cost Centre E: Street Furniture						
11	MCGM Traffic R3-RT-16-14	Circular Steel Bollards : Providing, fabricating and fixing circular Steel Bollards of 100mm dia circular Steel Pipe (of type 3F-A-1) as per the design incorporated in the Catalogue of Street Furniture (Vol-II). Published by MCGM, made of 10 Guage, 304 quality material with minimum nickel content not less than 10% (laboratory testing certificate shall be provided for used material) with steel pedestal and steel cap as per designs (3F-A1), (3F-A1.1), (3FA1.2) and (3F-A1-3) suitable to match the design adopted for surrounding railing including cutting, welding, riveting, polishing. The foundation shall either be with base plate of 200 x 200 x 6mm thick, 16 mm dia J Bolts or embedding pipe in foundation by providing 20mm Dia x 6 nos holdfasts embedded in 1:2:4 concrete as shown in drawing (3F-A1.1). inclusive of making good the damage portion of footpath with matching pavers blocks, tiles removing debris etc. complete as per specifications and as directed by the Engineer.	NOS	19147.00	524	10033028
12	MCGM Garden GW-3-2-f	Ss Dust Bin (Refer sketch 10) Product area:0.76Sqm, Capacity in ltrs: 42.0 ltrs, Product height:0.92m	NOS	17265.00	0	0
23	MCGM Traffic R2-RT-16-06	Providing, fabrication and fixing Stainless Steel railing of 10 gauge of 304 grade stainless steel having minimum nickel content 10% (Laboratory testing certificate shall be provided for used material), dia. 40mm circular pipe railing with dia. 18mm circular intermediate support, dia. 65mm circular main supports with Stainless Steel pedestal(base-I type) and Stainless Steel cap (type- I) including cutting, welding, riveting, polishing as directed and fixing in cement concrete foundation as shown vide Sr.No. 2F-A1 in catalogue of Street Furniture (Vol.I) published by M.C.G.M. including removal of surplus material/debries and restoring damaged portion of footpath, etc. as directed.(with advertisement)	MTR	18079.00	370	6689230
				Sub Total		**16722258**
Cost Centre F: Signages						
13	MCGM Traffic R3-RT-16-27	Providing, Fabricating, Erecting on site Facility Sign Boards (Taxi Stand/Police Station/Petrol Pump/Hospital and any other utilities) as per drawing no Facility Sign Drawing F1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mmx800mm. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than 80% of its original reflection after 10 years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer.	NOS	17598.00	0	0

14	MCGM Traffic R3-RT-16-25	Mandatory Board (600mm dia) hanging on pole – Providing, Fabricating, Erecting on site Mandatory & Cautionary Boards (of type 1S-A-3). As per the design incorporated in Street Furniture catalogue volume–II published by M.C.G.M., Signage plaque (box) shall be of size 600mm dia. Mounted on existing electrical pole with GL clamp. The box shall be made of4mm thick fibre reinforced plastic box covering both sides of pole. The cirCUMferential edge shall be closed with 3 mm thick FRP. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years shown in the drawing complete as per specification and as directed by the Engineer.	NOS	9765.00	0	0
26	MCGM Traffic R3-RT-16-23	Providing, Fabricating, Erecting on site Mandatory Boards as per drawing no Mandatory Sign Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm dia. The box shall be pasted with micro prismatic grade retro reflective sheeting conforming to Type XI standards of IRC 67:2022. The retro reflective sheeting used on the signs shall consist of white sheeting having a smooth outer surface which has the property of retro reflection over its entire surface. It shall be weather resistant and exhibit colour fastness. A certificate of having the sheeting tested as per ASTM D 4956 from international and Govt. of India laboratory along with three years outdoor weathering to be submitted. The message (legends, letters, numerals, logos etc) along with the boards to be digitally printed on latex or equivalent platform using ink approved by the sheeting manufacturer conforming to UL 2801 and UL 2818. The digitally printed sheeting should be over laminated using UV clear overlay film. The retro reflective sheeting along with digital printing, ink and over laminate should be warranted for 10 years as per IRC 67 2022 clause 6.8 and 6.9. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. work complete as per specifications and as directed by the Engineer.	NOS	12624.00	30	378720
15	MCGM Traffic R3-RT-16-21	Providing, Fabricating, Erecting on site Direction Board as per figure no RT-16-21, Vertical poles shall be made of ISMC of 150x75 hot dip galvanised post, Signage plaque (box) shall be of size 1200mm x 1800mm made of hot dip galvanised ISMC 75mm x 40mm & bracing of 50x6mm hot dip galvanised channel. The sign board box shall be covered with4 mm aluminum composite panel on both sides of the box assembly & shall be fixed to the vertical pole. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical poles shall be fixed to the ground by means of properly designed foundation of size 750mm x 750mm x 900mm. Complete as per specification and direction by the Engineer. NOS 52403	NOS	79576.00	0	0
28	MCGM Traffic R3-RT-16-24	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 900mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	17030.00	10	170300

29	MCGM Traffic R3-RT-16-43	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	14384.00	32	460288
30	MCGM Traffic FA-TR-07	Providing and Fixing Single Arrow Street Name Sign Board of size1600mm x 900mm made out of retro reflective sheeting of micro prismatic grade conforming to IRC-67:2012 & Type XI standards of ASTM D4956-09 specifications, fixed over 4mm thick ACP sheet supportedwith Back support frame of 25x25x3mm stainless steel angle of 304 grade, supported on a stainlesssteel pipe of 73.03 OD., 2.11 mm thk of 304 grade & surrounded by SS pipe of 38.10mm OD, 1.2 mm thkof 304 grade, firmly fixed to the ground by means of properly designed foundation with M20 gradecement concrete 45 cm X 45 cm X 60 cm , 60 cm below ground level as per approved drawing. Themessages (Legends , letter , numerals etc) and borders shall either be screen printed or of cut outfrom durable Transparent overlay film or cut out from same type of reflective sheeting as per TypeXI standards. Specification: as per IRC 67:2012. 10 years Warranty for Retro Reflective Sheetingfrom the original sheeting manufacturer & a certified copy of three years outdoor exposure reportfrom an independent test lab for the product offered shall be submitted by the contractor . (Bottomof the board shall be 900mm above ground level) Specification: IRC 67:2012.There shall be a stampbehind the ACP sheet carrying the name of the supplier, Name of sheeting Manufacturer, Type of retroreflective sheeting, Installation month & year as per clause 12.2 of IRC 67-2012.	NOS	32971.40	6	197828.4
31	MCGM Traffic FA-TR-13	Providing, Fabricating, Erecting on site Stop Sign Boards as per drawing no F2,Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box)shall be of size 600mm Octagon with red background & white lettering. The box shall be made of Hotdip galvanised MS angles of 25x25x3mm thick covered with 3 mm thick aluminum composite panel on bothsides of the box assembly; shall be fixed to the vertical pole. The box shall be fabricated bycovering the gap between the signs using 73mmx3mm thick hot dip galvanised MS plate all round theboard. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sidesconforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this boxusing transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall havewarranty of 10 years. The refection count shall not be less than 80% of its original reflectionafter 10 years. The vertical pipw shall be fixed to the ground by means of properly designedfoundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as perthe specification and directed by the Engineer	NOS	12452.00	25	311300

32	MCGM Traffic FA-TR-14	Providing, Fabricating, Erecting on site Toilet Indication Sign Boards as per drawingno F2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque(box) shall be of size 1050mmx600mm with fluorescent background & 300mm circle above the toiletsign'. The box shall be made of Hot dip galvanised MS angles of 25x25x3mm thick covered with 4 mmthick aluminum composite panel on both sides of the box assembly; shall be fixed to the verticalpole. The box shall be fabricated by covering the gap between the signs using 73mmx3mm thick hot dipgalvanised MS plate all round the board. The box shall be pasted with MICRO PRISMATIC GRADE retroreflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Lettersor borders to be pasted on this box using transparent electro cuttable film/Screen Printing. Thereflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than80% of its original reflection after 10 years. The vertical pipw shall be fixed to the ground bymeans of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mmabove ground. Complete as per the specification and directed by the Engineer.	NOS	12063.70	2	24127.4
				Sub Total		**1542563.8**
		Cost Centre G: Barricading during time of construction				
16	MCGM USOR R3-RW-7-36	Barricading the trenches on traffic flow side with 1.60 mtr. Height M.S.Angle post of 50 x 50 x 5 mm. buried in half the depth in drum of 20 ltrs. Capacit by 1:3:6 concrete spaced at 2.25 m centre to centre with 22 guage G.I. corrugated sheet of size 2.40 x 0.75 m. bolted to the M.S. Angle post and painted in yellow and black band with synthetic enamel paint as per traffic norms and as directed by the Engineers.	MTR	271.00	1000	271000
				Sub Total		**271000**
		Cost Centre H: Ramps				
17	MCGM USOR R3-RW-10-29	Providing & laying M-40 C.C.avg. compressive strength (As per IRC 15-2002.N.1.6) procured from B.M.C. approved R.M.C. plant including use of approved make of plasticizer/ retarder & Contractor's water with ice flakes (if required) and transported by transit mixer and placing at work site. Compacting, finishing, initial curing by approved curing compound & Contractor's water and tarring the sides of slab with hot bitumen as specified and directed (w/c ratio 0.4 maximum)(vata for	CUM	7962.00	0	0
18	MCGM USOR R3-RW-3-32	Providing & fixing in the carriageway, 80 mm thick Heritage paver interlocking white cement concrete pavers in red (Terra Cotta) Black, Brown lamen colour with vermeticular or any antiskid texture on top surface of approved pattern/ shape and colour having average crushing strength 50 N/mm² manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thick and consist cubical shape stone aggregate 8 mm sieve 100% passing and retain on 4.75 mm size sieve , silica sand and with pure iron oxide ultra voilete stabilized pigment @ 5% by weight of cement . The bottom layer should be 65 to 68 mm thick in gray cement having 12 mm sieve 100% passing aggregate as per technical specification rested on average 25 mm compacted thickness of uniformly graded river sand cushioning, compacted by proper capacity mechanical compactor with proper level grade and camber etc. complete as specified and as directed by the Engineer.	SQM	977.00	1103	1077240.2
19	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210). (For Tabletop)	CUM	2702.00	165.4	446883.78
20	MCGM USOR R3-RT-15-11	Fixing c.c tapered kerbs of type -2 as per Drg. EET&C/Gen/013/03Ty dt 11.12.03(Revised on 15.06.2006) available on site in C.M 1:2 painting the exposed surface of the kerbs with road marking paint grade-I (confirming to IS- 164) in two coats of approved colour including excavation (For Tabletop) in any material except rock / concrete road and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer , The rate is inclusive of all lift and leads etc complete as directed	MTR	476.00	440.9	209868.4

21	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210). (For Ramp)	CUM	2702.00	27.41	74048.31
22	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer.	SQM	908.00	182.7	165891.6
				Sub Total		**1973932.29**
		Cost Centre J: Miscelenous				
23	R3-RT-16-34	Supplying/ fixing of Two Way Raised Pavement Markers made of polycarbonate moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 13635 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 – DO III Dt 11.06. 1997 . The minimum reflective area of 13 Sq.Cm on each side and the slope to the base shall be 35 +/- 5 degree. Fixing will be without nails but by using epoxy resin based adhesive as per manufacturer's recommendation including site clearance etc and complete as directed by the engineer.'	MTR	433.00	2946	1275618
40	R3-RT-16-36	Supplying/ fixing of Flexible Median Marker which shall be made of tough, high impact resistant, injection moulded, thermoplastic body with U shape structure with overall eight of minimum 180mm and shank depth of minimum 30mm and thickness not less than 2mm. The exposed body structure should be cornered rounded for better aesthetics. The outer part of the body shall have the Abrasion loss not less than 35 mm3 when tested accordance with DIN53505 and DIN53516 respectively and shall retain at least 70% of this value when it is subjected to accelerated weathering for 500hrs as per the ASTM G155 standard. The logo of the manufacturer shall be embossed on either side of the body in the injection moulding process. - The flexible median marker shall have U shaped florescent yellow colour retro-reflective sheeting with minimum exposed reflective area 285 mm2. The reflective sheeting should confirm to Type XI Florescent Yellow sheeting as per IRC 67 2022 and ASTM D4956-11.	NOS	437.00	0	0
41	R3-RW-7-18	Providing applying Yellow & Black road marking paint grade –I in 3-coats including single coat of approved brand primer after cleaning of old surface of any type divider with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	SQM	170.00	0	0
42	R3-RW-7-17	Providing applying Yellow & Black road marking paint grade –I in 3-coats including single coat of approved brand primer after cleaning of old surface of kerb stone with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	MTR	59.00	467	27553
43	R3-RT-16-44	Providing and fixing rumblers of rubberised material	MTR	1472.00	1436	2113792

44	R3-ME-2-22-d	Supply & Laying of double wall corrugated (DWC) pipes of 90 mm OD / 76 mm I.D. HDPE for underground cable protection as per IS 14930 Part II. With necessary connecting socket/couplings, tees of some material at required depth up to 900 mm below road ground surface. backfilling of with light ramming is included in the scope.	MTR	291.00	300	87300
45	R3-RW-10-25	P/L R.M.C.M-20 C.C. procured from B.M.C. approved R.M.C. plant including use of approved makes of plasticizer/ retarder & transported by transit mixer & placing at worksite, compacting, finishing curing etc. by contractor's water & tarring the sides of form work with hot bitumen as specified & directed by the Engineer. (MINIMUM CEMENT CONTENT 260 Kg/m³.) (For Tree Bunds &	CUM	6489.00	8	51912
46	As per MMRDA Tender Document	Providing traffic wardens for regulation of traffic during construction as per the requirement of traffic police, etc. complete and as directed by Engineer-incharge.	NOS	300.00	180	54000
47	R3-RT-16-28	Circular treeguard:Providing, fabrication and fixing M.S.Circular treeguard with circular pipe of 10 gauge, 50mm Dia Circular vertica lpost ,40 mm Dia Horizontal support 18mm Dia. intermediate support with M.S. cap-(type-I) logo panel etc. including cutting welding, riveting, oil painting with navy blue colour or anyother approved colour shade as directed and fixing incement concrete foundation including cement concrete paver block lining including removal of surplus material/debris and restoring damaged portion of footpath etc. as directed. (Design details vide Drg.No.4F-A1.1, 4F- A1.2,A1.3 in the catalogue of street Furniture (Vol.I) published by B.M.C.)	NOS	19076.00	75	1430700
48	R3-RW-10-33	Providing and fixing of the precast TREE GUARD KERB of M-20 C.C. of height 230mm, width 100mm, Length 400mm, finished neatly, compacting, curing, formwork etc. including bedding of M-10 C.C. procured from B.M.C. approved R.M.C. plant,10cm.thick, filling of jointing in C.M. 1:2 and painting the exposed surface with 3 coats of road marking paint, Grade I of approved colours and quality including single coat of approved brand primer including excavation in C.C, asphalt etc. as specified and as directed.	MTR	501.00	590	295590
				Sub Total		**5336465**
				GRAND TOTAL		**4,06,70,534.08**

MULTI MODAL INTEGRATION FOR STATIONS ON MUMBAI METRO LINE 3						
NAME OF STATION:- CSMIA T1						
SCHEDULE B-3						
BOQ / SOR						
SR. NO.	Refference	ITEM DESCRIPTION	UNIT	RATE	FINAL QTY	AMOUNT
Cost Centre A: Excavation and Dismantling						
1	MCGM USOR R3-RW-4-03	Removing existing kerb stones, cleaning off old mortar, carting away up to a distance of 2 K.M. and stacking the same as directed.	RMT	42.00	427.47	17953.74
2	MCGM USOR R3-RW-3-22	Removing the paver blocks of any thickness.,size,& colour from carriage way OR footpath & transporting the same to ward depot OR any where in MCGM limit. The paver blocks shall be stacked neatly at specified location etc. complete as specified and as directed by the Engineer.	SQM	193.00	2273	438679.35
3	PWD-2.11 MORTH 301	Excavation for roadway in earth, soil of all sorts, sand, gravel or soft murum including dressing section to the required grade, camber and side slopes and conveying the excavated materials with all lifts upto a lead of 50m. and spreading for embankment or stacking as directed.	CUM	75.60	340.94	25775.2908
4	MCGM BLDG R3-CS-DD-53	Disposal of building rubbish / malba / similar unserviceable,dismantled or waste materials by mechanical means including loading,transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all loads including all lifts involved.	CUM	109.00	340.94	37162.787
5	MCGM USOR R3-RW-7-01	Removing & refixing traffic regulatory boards/busstop boards/street name boards etc. in M-10 cement concrete, complete as directed.	EA	1017.00	13	13221
6	MCGM USOR R3-SWD-35	Cutting down existing cement / lime concrete works by any means in pavement, bedding below foundation, coping, walls arches, stone, brick pavement coping etc. of any thickness of any height / depth above or below ground level etc. complete, as specified & as directed by Engineer in- Charge.	CUM	1703.00	12.06	20538.18
				Sub Total		553330.3478
Cost centre B: Storm Water Drains						
7	MCGM USOR R3-RW-6-03	Raising or lowering circular manholes to the required level upto 20 cm including all material, form work etc. with 16 cm thick cement concrete M-15 (1:2:4) coping under frame and cover of manhole, including curing etc. complete as specified and as directed	EA	1435.00	8	11480
8	MCGM USOR R3-RW-6-05	Raising or lowering rectangular manholes to the required level upto 30 cm including all materials, form work, brick work and with 16 cm thick M-15 cement concrete coping under frame & cover of manhole including curing etc. complete, as specified and as directed.	EA	2803.00	165	462495
9	MCGM USOR R3-SWD-74	Providing and laying 300 mm dia NP2 Class R.C.C. Hume pipes with Collar joints conforming to IS 458:2003 and laid on approved bedding as per IS 783:1985 (Reaff. 2010) including jointing the pipes and filleting with hemp and stiff mix of cement mortar 1:2, including testing of pipes at contractor's costs (in presence of munipal staff) as per IS 3597 etc. complete as specified & as directed by Engineer-in-Charge.	MTR	964.00	150	144600
10	MCGM USOR R3-SWD-183	Supplying and fixing 1.20m x 0.90m (2 nos of 0.60m x 0.90m) internal size rectangular D.I. air-tight hinged type cover and frame (weighing minimum 300 kg.) of material grade SG-500/7 as per IS 1865-1991with grade designation of C250 as per EN 124, specification no 3, including testing and inspection as per guidelines of IS specifications, including fixing with M-30 concrete and locking arrangement etc. complete as specified and as directed by Engineer-in-Charge.	NOS	57686.00	12	692232
11	MCGM USOR R3-SWD-119	Providing and Constructing brick masonry inspection chamber rectangular 0.9 M x 0.60 M and 0.6 m deep on sewer with 230 mm brick walls in cement mortar 1:3 plastered both inside & outside with 20 mm thick cement mortar 1:2 and neat cement rendering so as to give a smooth surface, including 230 mm. cement concrete bedding (M 15) and cement concrete (M 15) in haunches and channels finished smooth with 20 mm thick cement mortar (1:1) and fixing C.I. heavy duty rectangular frame and cover of size 0.90 m x 0.45 m weighing minimum 270 kg. resting on 300 mm high C.C. cap in M 20 with (1:1) with cement plaster on both sides and necessary C.I. steps (weighing 5.40 kg each) staggered at 300 mm c /c including 75 mm wide vata all around the external portion of the chamber and the foundation concrete in C.M. 1: 1 etc. complete as per plan in and as per drawing (Dwg No MCGM/SWD/2013-03),etc complete as specified & as directed by Engineer-in-Charge.	EA	42303.00	2	84606
12	MCGM USOR R3-SWD-148	Supplying and fixing 0.90m x 0.60m internal size of rectangular C.I. air-tight cover and frame weighing minmum 270 of material grade of min. FG 150 conforming to IS 210:2009 and specification no SP-SWD-3 with the grade designation of HD 20 conforming to IS 1726:1991including testing as per CL 10 .	EA	33841.00	2	67682
				Sub Total		1463095

Cost centre C: Footpaths, Paver Blocks & Kerbstones						
13	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210).	CUM	2702.00	369.34	997951.276
14	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer.	SQM	908.00	2978.7	2704650.52
15	MCGM USOR R3-RW-10-54	Providing and fixing of the precast kerb stone of height 325mm., base width 165mm., top width 115mm.in M20grade RMC supplied through MCGM approved plant or concrete mixed with use of weigh batch mixers as detailed in drawing u/No.Dy.Ch.E./Rds/93 /E.S. of 17 / 8 / 2005 ,excavation in any soil except rock, laying a leveling course of M 15 grade RMC 100mm. thick, to required slope (inclusive of form work) jointing in C.M.1:2 proportion flush to concrete surface, painting exposed surface with one coat of primer and two coats of 1st grade road marking paint in the yellow/white/black or any shade as directed. (Kerbstones shall be procurred from MCGM registered agencies).	MTR	549.00	0	0
16	CPWD-DAR-2019-16.90	Providing and laying tactile tile (for vision impaired persons as per standards) of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS:15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.	SQM	1933.75	547.41	1058554.088
17	MCGM USOR R3-RW-10-45	Providing and fixing of Water Dished Channel size : 600 x 300 x 80mm, M-40 grade manufactured in vacuum wet press technology plant with excellent finish and sharp edges inclusive of excavation in any soil except rock, laying of leveling course of M-15 grade RMC 100 mm thick to required slope (inclusive of form work) jointing in 1:2 C:M. prop. flush to concrete surfaces as directed (Watertables shall be procured from BMC registered agencies).	MTR	805.00	750	603750
				Sub Total		**5364905.88**
Cost Centre D: Lane Markings						
18	MCGM Traffic R3-RT-16-32	Providing and applying hot applied thermoplastic road marking material with glass beads extremely high skid resistance 2.5mm thick with primer coat (tack coat) for binding on cement concrete road/paver blocks surface. All labour materials with special aggregates etc, as specified in B.S. part-I & II 1989 and carrying out the marking on any road on center line and other lane marking continuous for intermittent 10cm or 15cm width and also pedestrian crossings stripes as well as spraying further quality of glass beads of type II uniformly into a mono layer on to the hot paint line in quick succession of the paint spraying operation @ 250gms per sq.mt. area as directed and as per B.S./M.O.S.T. specification in white/yellow colour	SQM	955.00	0	0
19	MCGM Traffic R3-RT-16-07	Arrow marking for Route direction straight or right or left or straight & right or straight or left & lettering as per design in white or traffic yellow as specified and directed for speed limit upto 50 km/hrs.	NOS	1668.00	0	0
20	PWD-6.12b MORTH 301	Providing and applying Cold plastic paint two component rolled on surfacing material solvent free, high build two pack seamless, tough, skidresistant, material with has property of attaining 2.00 mm thickness in single coat application white (or as required colour) based on glass and colour retaining acralic cross linking resin system for coloured road surfacing including surface cleaning and cost of all material etc. complete. (All inclusive on bitumen or concrete surface) work shall carried out as per IRC 35-2015 clause 2.2	SQM	1581.30	0	0
				Sub Total		**0.00**

Cost Centre E: Street Furniture						
21	MCGM Traffic R3-RT-16-14	Circular Steel Bollards : Providing, fabricating and fixing circular Steel Bollards of 100mm dia circular Steel Pipe (of type 3F-A-1) as per the design incorporated in the Catalogue of Street Furniture (Vol-II). Published by MCGM, made of 10 Guage, 304 quality material with minimum nickel content not less than 10% (laboratory testing certificate shall be provided for used material) with steel pedestal and steel cap as per designs (3F-A1), (3F-A1.1), (3FA1.2) and (3F-A1-3) suitable to match the design adopted for surrounding railing including cutting, welding, riveting, polishing. The foundation shall either be with base plate of 200 x 200 x 6mm thick, 16 mm dia J Bolts or embedding pipe in foundation by providing 20mm Dia x 6 nos holdfasts embedded in 1:2:4 concrete as shown in drawing (3F-A1.1). inclusive of making good the damage portion of footpath with matching pavers blocks, tiles removing debris etc. complete as per specifications and as directed by the Engineer.	NOS	19147.00	428	8194916
22	MCGM Garden GW-3-2-f	Ss Dust Bin (Refer sketch 10) Product area:0.76Sqm, Capacity in ltrs: 42.0 ltrs, Product height:0.92m	NOS	17265.00	0	0
23	MCGM Traffic R2-RT-16-06	Providing, fabrication and fixing Stainless Steel railing of 10 gauge of 304 grade stainless steel having minimum nickel content 10% (Laboratory testing certificate shall be provided for used material), dia. 40mm circular pipe railing with dia. 18mm circular intermediate support, dia. 65mm circular main supports with Stainless Steel pedestal(base-I type) and Stainless Steel cap (type- I) including cutting, welding, riveting, polishing as directed and fixing in cement concrete foundation as shown vide Sr.No. 2F-A1 in catalogue of Street Furniture (Vol.I) published by M.C.G.M. including removal of surplus material/debries and restoring damaged portion of footpath, etc. as directed.(with advertisement)	MTR	18079.00	350	6327650
				Sub Total		**14522566**

Cost Centre F: Signages						
24	MCGM Traffic R3-RT-16-27	Providing, Fabricating, Erecting on site Facility Sign Boards (Taxi Stand/Police Station/Petrol Pump/Hospital and any other utilities) as per drawing no Facility Sign Drawing F1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mmx800mm. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than 80% of its original reflection after 10 years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer.	NOS	17598.00	0	0
25	MCGM Traffic R3-RT-16-25	Mandatory Board (600mm dia) hanging on pole – Providing, Fabricating, Erecting on site Mandatory & Cautionary Boards (of type 1S-A-3). As per the design incorporated in Street Furniture catalogue volume–II published by M.C.G.M., Signage plaque (box) shall be of size 600mm dia. Mounted on existing electrical pole with GL clamp. The box shall be made of4mm thick fibre reinforced plastic box covering both sides of pole. The cirCUMferential edge shall be closed with 3 mm thick FRP. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years shown in the drawing complete as per specification and as directed by the Engineer.	NOS	9765.00	0	0
26	MCGM Traffic R3-RT-16-23	Providing, Fabricating, Erecting on site Mandatory Boards as per drawing no Mandatory Sign Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm dia. The box shall be pasted with micro prismatic grade retro reflective sheeting conforming to Type XI standards of IRC 67:2022. The retro reflective sheeting used on the signs shall consist of white sheeting having a smooth outer surface which has the property of retro reflection over its entire surface. It shall be weather resistant and exhibit colour fastness. A certificate of having the sheeting tested as per ASTM D 4956 from international and Govt. of India laboratory along with three years outdoor weathering to be submitted. The message (legends, letters, numerals, logos etc) along with the boards to be digitally printed on latex or equivalent platform using ink approved by the sheeting manufacturer conforming to UL 2801 and UL 2818. The digitally printed sheeting should be over laminated using UV clear overlay film. The retro reflective sheeting along with digital printing, ink and over laminate should be warranted for 10 years as per IRC 67 2022 clause 6.8 and 6.9. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. work complete as per specifications and as directed by the Engineer.	NOS	12624.00	20	252480
27	MCGM Traffic R3-RT-16-21	Providing, Fabricating, Erecting on site Direction Board as per figure no RT-16-21, Vertical poles shall be made of ISMC of 150x75 hot dip galvanised post, Signage plaque (box) shall be of size 1200mm x 1800mm made of hot dip galvanised ISMC 75mm x 40mm & bracing of 50x6mm hot dip galvanised channel. The sign board box shall be covered with4 mm aluminum composite panel on both sides of the box assembly & shall be fixed to the vertical pole. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical poles shall be fixed to the ground by means of properly designed foundation of size 750mm x 750mm x 900mm. Complete as per specification and direction by the Engineer. NOS 52403	NOS	79576.00	0	0

28	MCGM Traffic R3-RT-16-24	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 900mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	17030.00	0	0
29	MCGM Traffic R3-RT-16-43	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	14384.00	2	28768
30	MCGM Traffic FA-TR-07	Providing and Fixing Single Arrow Street Name Sign Board of size1600mm x 900mm made out of retro reflective sheeting of micro prismatic grade conforming to IRC-67:2012 & Type XI standards of ASTM D4956-09 specifications, fixed over 4mm thick ACP sheet supportedwith Back support frame of 25x25x3mm stainless steel angle of 304 grade, supported on a stainlesssteel pipe of 73.03 OD., 2.11 mm thk of 304 grade & surrounded by SS pipe of 38.10mm OD, 1.2 mm thkof 304 grade, firmly fixed to the ground by means of properly designed foundation with M20 gradecement concrete 45 cm X 45 cm X 60 cm , 60 cm below ground level as per approved drawing. Themessages (Legends , letter , numerals etc) and borders shall either be screen printed or of cut outfrom durable Transparent overlay film or cut out from same type of reflective sheeting as per TypeXI standards. Specification: as per IRC 67:2012. 10 years Warranty for Retro Reflective Sheetingfrom the original sheeting manufacturer & a certified copy of three years outdoor exposure reportfrom an independent test lab for the product offered shall be submitted by the contractor . (Bottomof the board shall be 900mm above ground level) Specification: IRC 67:2012.There shall be a stampbehind the ACP sheet carrying the name of the supplier, Name of sheeting Manufacturer, Type of retroreflective sheeting, Installation month & year as per clause 12.2 of IRC 67-2012.	NOS	32971.40	6	197828.4
31	MCGM Traffic FA-TR-13	Providing, Fabricating, Erecting on site Stop Sign Boards as per drawing no F2,Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box)shall be of size 600mm Octagon with red background & white lettering. The box shall be made of Hotdip galvanised MS angles of 25x25x3mm thick covered with 3 mm thick aluminum composite panel on bothsides of the box assembly; shall be fixed to the vertical pole. The box shall be fabricated bycovering the gap between the signs using 73mmx3mm thick hot dip galvanised MS plate all round theboard. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sidesconforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this boxusing transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall havewarranty of 10 years. The refection count shall not be less than 80% of its original reflectionafter 10 years. The vertical pipw shall be fixed to the ground by means of properly designedfoundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as perthe specification and directed by the Engineer	NOS	12452.00	15	186780

32	MCGM Traffic FA-TR-14	Providing, Fabricating, Erecting on site Toilet Indication Sign Boards as per drawingno F2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque(box) shall be of size 1050mmx600mm with fluorescent background & 300mm circle above the toiletsign'. The box shall be made of Hot dip galvanised MS angles of 25x25x3mm thick covered with 4 mmthick aluminum composite panel on both sides of the box assembly; shall be fixed to the verticalpole. The box shall be fabricated by covering the gap between the signs using 73mmx3mm thick hot dipgalvanised MS plate all round the board. The box shall be pasted with MICRO PRISMATIC GRADE retroreflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Lettersor borders to be pasted on this box using transparent electro cuttable film/Screen Printing. Thereflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than80% of its original reflection after 10 years. The vertical pipw shall be fixed to the ground bymeans of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mmabove ground. Complete as per the specification and directed by the Engineer.	NOS	12063.70	0	0
				Sub Total		**665856.4**
Cost Centre G: Barricading during time of construction						
33	MCGM USOR R3-RW-7-36	Barricading the trenches on traffic flow side with 1.60 mtr. Height M.S.Angle post of 50 x 50 x 5 mm. buried in half the depth in drum of 20 ltrs. Capacit by 1:3:6 concrete spaced at 2.25 m centre to centre with 22 guage G.I. corrugated sheet of size 2.40 x 0.75 m. bolted to the M.S. Angle post and painted in yellow and black band with synthetic enamel paint as per traffic norms and as directed by the Engineers.	MTR	271.00	1000	271000
				Sub Total		**271000**

Cost Centre H: Ramps						
34	MCGM USOR R3-RW-10-29	Providing & laying M-40 C.C.avg. compressive strength (As per IRC 15-2002.N.1.6) procured from B.M.C. approved R.M.C. plant including use of approved make of plasticizer/ retarder & Contractor's water with ice flakes (if required) and transported by transit mixer and placing at work site. Compacting, finishing, initial curing by approved curing compound & Contractor's water and tarring the sides of slab with hot bitumen as specified and directed (w/c ratio 0.4 maximum)(vata for curring will be paid separately.) (MINIMUM CEMENT CONTENT 350 kg/m³	CUM	7962.00	0	0
35	MCGM USOR R3-RW-3-32	Providing & fixing in the carriageway, 80 mm thick Heritage paver interlocking white cement concrete pavers in red (Terra Cotta) Black, Brown lamen colour with vermeticular or any antiskid texture on top surface of approved pattern/ shape and colour having average crushing strength 50 N/mm² manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thick and consist cubical shape stone aggregate 8 mm sieve 100% passing and retain on 4.75 mm size sieve , silica sand and with pure iron oxide ultra voilete stabilized pigment @ 5% by weight of cement . The bottom layer should be 65 to 68 mm thick in gray cement having 12 mm sieve 100% passing aggregate as per technical specification rested on average 25 mm compacted thickness of uniformly graded river sand cushioning, compacted by proper capacity mechanical compactor with proper level grade and camber etc. complete as specified and as directed by the Engineer.	SQM	977.00	13.6	13287.2
36	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210). (For Tabletop)	CUM	2702.00	19.523	52749.795
37	MCGM USOR R3-RT-15-11	Fixing c.c tapered kerbs of type -2 as per Drg. EET&C/Gen/013/03Ty dt 11.12.03(Revised on 15.06.2006) available on site in C.M 1:2 painting the exposed surface of the kerbs with road marking paint grade-I (confirming to IS- 164) in two coats of approved colour including excavation (For Tabletop) in any material except rock / concrete road and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by	MTR	476.00	6	2856
38	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer.	SQM	908.00	116.55	105827.4
				Sub Total		**174720.395**

Cost Centre J: Miscelenous						
39	R3-RT-16-34	Supplying/ fixing of Two Way Raised Pavement Markers made of polycarbonate moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 13635 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 – DO III Dt 11.06. 1997 . The minimum reflective area of 13 Sq.Cm on each side and the slope to the base shall be 35 +/- 5 degree. Fixing will be without nails but by using epoxy resin based adhesive as per manufacturer's recommendation including site clearance etc and complete as directed by the engineer.'	MTR	433.00	1537	665521
40	R3-RT-16-36	Supplying/ fixing of Flexible Median Marker which shall be made of tough, high impact resistant, injection moulded, thermoplastic body with U shape structure with overall eight of minimum 180mm and shank depth of minimum 30mm and thickness not less than 2mm. The exposed body structure should be cornered rounded for better aesthetics. The outer part of the body shall have the Abrasion loss not less than 35 mm3 when tested accordance with DIN53505 and DIN53516 respectively and shall retain at least 70% of this value when it is subjected to accelerated weathering for 500hrs as per the ASTM G155 standard. The logo of the manufacturer shall be embossed on either side of the body in the injection moulding process. - The flexible median marker shall have U shaped florescent yellow colour retro-reflective sheeting with minimum exposed reflective area 285 mm2. The reflective sheeting should confirm to Type XI Florescent Yellow sheeting as per IRC 67 2022 and ASTM D4956-11.	NOS	437.00	0	0
41	R3-RW-7-18	Providing applying Yellow & Black road marking paint grade –I in 3-coats including single coat of approved brand primer after cleaning of old surface of any type divider with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	SQM	170.00	0	0
42	R3-RW-7-17	Providing applying Yellow & Black road marking paint grade –I in 3-coats including single coat of approved brand primer after cleaning of old surface of kerb stone with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	MTR	59.00	670	39530
43	R3-RT-16-44	Providing and fixing rumblers of rubberised material	MTR	1472.00	126	185472
44	R3-ME-2-22-d	Supply & Laying of double wall corrugated (DWC) pipes of 90 mm OD / 76 mm I.D. HDPE for underground cable protection as per IS 14930 Part II. With necessary connecting socket/couplings, tees of some material at required depth up to 900 mm below road ground surface. backfilling of with light ramming is included in the scope.	MTR	291.00	400	116400
45	R3-RW-10-25	P/L R.M.C.M-20 C.C. procured from B.M.C. approved R.M.C. plant including use of approved makes of plasticizer/ retarder & transported by transit mixer & placing at worksite, compacting, finishing curing etc. by contractor's water & tarring the sides of form work with hot bitumen as specified & directed by the Engineer. (MINIMUM CEMENT CONTENT 260 Kg/m³.) (For Tree Bunds &	CUM	6489.00	8	51912
46	As per MMRDA Tender Document	Providing traffic wardens for regulation of traffic during construction as per the requirement of traffic police, etc. complete and as directed by Engineer-incharge.	NOS	300.00	180	54000
47	R3-RT-16-28	Circular treeguard:Providing, fabrication and fixing M.S.Circular treeguard with circular pipe of 10 gauge, 50mm Dia Circular vertica lpost ,40 mm Dia Horizontal support 18mm Dia. intermediate support with M.S. cap-(type-I) logo panel etc. including cutting welding, riveting, oil painting with navy blue colour or anyother approved colour shade as directed and fixing incement concrete foundation including cement concrete paver block lining including removal of surplus material/debris and restoring damaged portion of footpath etc. as directed. (Design details vide Drg.No.4F-A1.1, 4F- A1.2,A1.3 in the catalogue of street Furniture (Vol.I) published by B.M.C.)	NOS	19076.00	80	1526080
48	R3-RW-10-33	Providing and fixing of the precast TREE GUARD KERB of M-20 C.C. of height 230mm, width 100mm, Length 400mm, finished neatly, compacting, curing, formwork etc. including bedding of M-10 C.C. procured from B.M.C. approved R.M.C. plant,10cm.thick, filling of jointing in C.M. 1:2 and painting the exposed surface with 3 coats of road marking paint, Grade I of approved colours and quality including single coat of approved brand primer including excavation in C.C, asphalt etc. as specified and as directed.	MTR	501.00	700	350700
					Sub Total	**2989615**
					GRAND TOTAL	**2,60,05,089.03**

MULTI MODAL INTEGRATION FOR STATIONS ON MUMBAI METRO LINE 3						
NAME OF STATION:- SANTACRUZ						
SCHEDULE B-4						
BOQ / SOR						
SR. NO.	Refference	ITEM DESCRIPTION	UNIT	RATE	FINAL QTY	AMOUNT
Cost Centre A: Excavation and Dismantling						
1	MCGM USOR R3-RW-4-03	Removing existing kerb stones, cleaning off old mortar, carting away up to a distance of 2 K.M. and stacking the same as directed.	RMT	42.00	1332	55958.28
2	MCGM USOR R3-RW-3-22	Removing the paver blocks of any thickness.,size,& colour from carriage way OR footpath & transporting the same to ward depot OR any where in MCGM limit. The paver blocks shall be stacked neatly at specified location etc. complete as specified and as directed by the Engineer.	SQM	193.00	3871	747104.93
3	PWD-2.11 MORTH 301	Excavation for roadway in earth, soil of all sorts, sand, gravel or soft murum including dressing section to the required grade, camber and side slopes and conveying the excavated materials with all lifts upto a lead of 50m. and spreading for embankment or stacking as directed.	CUM	75.60	580.7	43897.2912
4	MCGM BLDG R3-CS-DD-53	Disposal of building rubbish / malba / similar unserviceable,dismantled or waste materials by mechanical means including loading,transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all loads including all lifts involved.	CUM	109.00	580.7	63291.068
5	MCGM USOR R3-RW-7-01	Removing & refixing traffic regulatory boards/busstop boards/street name boards etc. in M-10 cement concrete, complete as directed.	EA	1017.00	17	17289
6	MCGM USOR R3-SWD-35	Cutting down existing cement / lime concrete works by any means in pavement, bedding below foundation, coping, walls arches, stone, brick pavement coping etc. of any thickness of any height / depth above or below ground level etc. complete, as specified & as directed by Engineer in- Charge.	CUM	1703.00	36.21	61660.521
				Sub Total		989201.0902
Cost centre B: Storm Water Drains						
7	MCGM USOR R3-RW-6-03	Raising or lowering circular manholes to the required level upto 20 cm including all material, form work etc. with 16 cm thick cement concrete M-15 (1:2:4) coping under frame and cover of manhole, including curing etc. complete as specified and as directed	EA	1435.00	6	8610
8	MCGM USOR R3-RW-6-05	Raising or lowering rectangular manholes to the required level upto 30 cm including all materials, form work, brick work and with 16 cm thick M-15 cement concrete coping under frame & cover of manhole including curing etc. complete, as specified and as directed.	EA	2803.00	205	574615
9	MCGM USOR R3-SWD-74	Providing and laying 300 mm dia NP2 Class R.C.C. Hume pipes with Collar joints conforming to IS 458:2003 and laid on approved bedding as per IS 783:1985 (Reaff. 2010) including jointing the pipes and filleting with hemp and stiff mix of cement mortar 1:2, including testing of pipes at contractor's costs (in presence of munipal staff) as per IS 3597 etc. complete as specified & as directed by Engineer-in-Charge.	MTR	964.00	270	260280
10	MCGM USOR R3-SWD-183	Supplying and fixing 1.20m x 0.90m (2 nos of 0.60m x 0.90m) internal size rectangular D.I. air-tight hinged type cover and frame (weighing minimum 300 kg.) of material grade SG-500/7 as per IS 1865-1991with grade designation of C250 as per EN 124, specification no 3, including testing and inspection as per guidelines of IS specifications, including fixing with M-30 concrete and locking arrangement etc. complete as specified and as directed by Engineer-in-Charge.	NOS	57686.00	35	2019010
11	MCGM USOR R3-SWD-119	Providing and Constructing brick masonry inspection chamber rectangular 0.9 M x 0.60 M and 0.6 m deep on sewer with 230 mm brick walls in cement mortar 1:3 plastered both inside & outside with 20 mm thick cement mortar 1:2 and neat cement rendering so as to give a smooth surface, including 230 mm. cement concrete bedding (M 15) and cement concrete (M 15) in haunches and channels finished smooth with 20 mm thick cement mortar (1:1) and fixing C.I. heavy duty rectangular frame and cover of size 0.90 m x 0.45 m weighing minimum 270 kg. resting on 300 mm high C.C. cap in M 20 with (1:1) with cement plaster on both sides and necessary C.I. steps (weighing 5.40 kg each) staggered at 300 mm c /c including 75 mm wide vata all around the external portion of the chamber and the foundation concrete in C.M. 1: 1 etc. complete as per plan in and as per drawing (Dwg No MCGM/SWD/2013-03),etc complete as specified & as directed by Engineer-in-Charge.	EA	42303.00	3	126909
12	MCGM USOR R3-SWD-148	Supplying and fixing 0.90m x 0.60m internal size of rectangular C.I. air-tight cover and frame weighing minmum 270 of material grade of min. FG 150 conforming to IS 210:2009 and specification no SP-SWD-3 with the grade designation of HD 20 conforming to IS 1726:1991including testing as per CL 10 .	EA	33841.00	2	67682
				Sub Total		3057106

Cost centre C: Footpaths, Paver Blocks & Kerbstones						
13	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210).	CUM	2702.00	301.2	813764.042
14	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer.	SQM	908.00	2764	2510029.8
15	MCGM USOR R3-RW-10-54	Providing and fixing of the precast kerb stone of height 325mm., base width 165mm., top width 115mm.in M20grade RMC supplied through MCGM approved plant or concrete mixed with use of weigh batch mixers as detailed in drawing u/No.Dy.Ch.E./Rds/93 /E.S. of 17 / 8 / 2005 ,excavation in any soil except rock, laying a leveling course of M 15 grade RMC 100mm. thick, to required slope (inclusive of form work) jointing in C.M.1:2 proportion flush to concrete surface, painting exposed surface with one coat of primer and two coats of 1st grade road marking paint in the yellow/white/black or any shade as directed. (Kerbstones shall be procurred from MCGM registered agencies).	MTR	549.00	0	0
16	CPWD-DAR-2019-16.90	Providing and laying tactile tile (for vision impaired persons as per standards) of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS:15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.	SQM	1933.75	988	1910467.65
17	MCGM USOR R3-RW-10-45	Providing and fixing of Water Dished Channel size : 600 x 300 x 80mm, M-40 grade manufactured in vacuum wet press technology plant with excellent finish and sharp edges inclusive of excavation in any soil except rock, laying of leveling course of M-15 grade RMC 100 mm thick to required slope (inclusive of form work) jointing in 1:2 C:M. prop. flush to concrete surfaces as directed (Watertables shall be procured from BMC registered agencies).	MTR	805.00	270	217350
				Sub Total		**5451611.492**

Cost Centre D: Lane Markings						
18	MCGM Traffic R3-RT-16-32	Providing and applying hot applied thermoplastic road marking material with glass beads extremely high skid resistance 2.5mm thick with primer coat (tack coat) for binding on cement concrete road/paver blocks surface. All labour materials with special aggregates etc, as specified in B.S. part-I & II 1989 and carrying out the marking on any road on center line and other lane marking continuous for intermittent 10cm or 15cm width and also pedestrian crossings stripes as well as spraying further quality of glass beads of type II uniformly into a mono layer on to the hot paint line in quick succession of the paint spraying operation @ 250gms per sq.mt. area as directed and as per B.S./M.O.S.T. specification in white/yellow colour	SQM	955.00	0	0
19	MCGM Traffic R3-RT-16-07	Arrow marking for Route direction straight or right or left or straight & right or straight or left & lettering as per design in white or traffic yellow as specified and directed for speed limit upto 50 km/hrs.	NOS	1668.00	0	0
20	PWD-6.12b MORTH 301	Providing and applying Cold plastic paint two component rolled on surfacing material solvent free, high build two pack seamless, tough, skidresistant, material with has property of attaining 2.00 mm thickness in single coat application white (or as required colour) based on glass and colour retaining acralic cross linking resin system for coloured road surfacing including surface cleaning and cost of all material etc. complete. (All inclusive on bitumen or concrete surface) work shall carried out as per IRC 35-2015 clause 2.2	SQM	1581.30	0	0
				Sub Total		**0**
Cost Centre E: Street Furniture						
21	MCGM Traffic R3-RT-16-14	Circular Steel Bollards : Providing, fabricating and fixing circular Steel Bollards of 100mm dia circular Steel Pipe (of type 3F-A-1) as per the design incorporated in the Catalogue of Street Furniture (Vol-II). Published by MCGM, made of 10 Guage, 304 quality material with minimum nickel content not less than 10% (laboratory testing certificate shall be provided for used material) with steel pedestal and steel cap as per designs (3F-A1), (3F-A1.1), (3FA1.2) and (3F-A1-3) suitable to match the design adopted for surrounding railing including cutting, welding, riveting, polishing. The foundation shall either be with base plate of 200 x 200 x 6mm thick, 16 mm dia J Bolts or embedding pipe in foundation by providing 20mm Dia x 6 nos holdfasts embedded in 1:2:4 concrete as shown in drawing (3F-A1.1). inclusive of making good the damage portion of footpath with matching pavers blocks, tiles removing debris etc. complete as per specifications and as directed by the Engineer.	NOS	19147.00	252	4825044
22	MCGM Garden GW-3-2-f	Ss Dust Bin (Refer sketch 10) Product area:0.76Sqm, Capacity in ltrs: 42.0 ltrs, Product height:0.92m	NOS	17265.00	0	0
23	MCGM Traffic R2-RT-16-06	Providing, fabrication and fixing Stainless Steel railing of 10 gauge of 304 grade stainless steel having minimum nickel content 10% (Laboratory testing certificate shall be provided for used material), dia. 40mm circular pipe railing with dia. 18mm circular intermediate support, dia. 65mm circular main supports with Stainless Steel pedestal(base-I type) and Stainless Steel cap (type- I) including cutting, welding, riveting, polishing as directed and fixing in cement concrete foundation as shown vide Sr.No. 2F-A1 in catalogue of Street Furniture (Vol.I) published by M.C.G.M. including removal of surplus material/debries and restoring damaged portion of footpath, etc. as directed.(with advertisement)	MTR	18079.00	100	1807900
				Sub Total		**6632944**

Cost Centre F: Signages						
24	MCGM Traffic R3-RT-16-27	Providing, Fabricating, Erecting on site Facility Sign Boards (Taxi Stand/Police Station/Petrol Pump/Hospital and any other utilities) as per drawing no Facility Sign Drawing F1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mmx800mm. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than 80% of its original reflection after 10 years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer.	NOS	17598.00	0	0
25	MCGM Traffic R3-RT-16-25	Mandatory Board (600mm dia) hanging on pole – Providing, Fabricating, Erecting on site Mandatory & Cautionary Boards (of type 1S-A-3). As per the design incorporated in Street Furniture catalogue volume–II published by M.C.G.M., Signage plaque (box) shall be of size 600mm dia. Mounted on existing electrical pole with GL clamp. The box shall be made of4mm thick fibre reinforced plastic box covering both sides of pole. The cirCUMferential edge shall be closed with 3 mm thick FRP. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years shown in the drawing complete as per specification and as directed by the Engineer.	NOS	9765.00	0	0
26	MCGM Traffic R3-RT-16-23	Providing, Fabricating, Erecting on site Mandatory Boards as per drawing no Mandatory Sign Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm dia. The box shall be pasted with micro prismatic grade retro reflective sheeting conforming to Type XI standards of IRC 67:2022. The retro reflective sheeting used on the signs shall consist of white sheeting having a smooth outer surface which has the property of retro reflection over its entire surface. It shall be weather resistant and exhibit colour fastness. A certificate of having the sheeting tested as per ASTM D 4956 from international and Govt. of India laboratory along with three years outdoor weathering to be submitted. The message (legends, letters, numerals, logos etc) along with the boards to be digitally printed on latex or equivalent platform using ink approved by the sheeting manufacturer conforming to UL 2801 and UL 2818. The digitally printed sheeting should be over laminated using UV clear overlay film. The retro reflective sheeting along with digital printing, ink and over laminate should be warranted for 10 years as per IRC 67 2022 clause 6.8 and 6.9. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. work complete as per specifications and as directed by the Engineer.	NOS	12624.00	14	176736
27	MCGM Traffic R3-RT-16-21	Providing, Fabricating, Erecting on site Direction Board as per figure no RT-16-21, Vertical poles shall be made of ISMC of 150x75 hot dip galvanised post, Signage plaque (box) shall be of size 1200mm x 1800mm made of hot dip galvanised ISMC 75mm x 40mm & bracing of 50x6mm hot dip galvanised channel. The sign board box shall be covered with4 mm aluminum composite panel on both sides of the box assembly & shall be fixed to the vertical pole. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical poles shall be fixed to the ground by means of properly designed foundation of size 750mm x 750mm x 900mm. Complete as per specification and direction by the Engineer. NOS 52403	NOS	79576.00	0	0

28	MCGM Traffic R3-RT-16-24	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 900mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	17030.00	0	0
29	MCGM Traffic R3-RT-16-43	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	14384.00	22	316448
30	MCGM Traffic FA-TR-07	Providing and Fixing Single Arrow Street Name Sign Board of size1600mm x 900mm made out of retro reflective sheeting of micro prismatic grade conforming to IRC-67:2012 & Type XI standards of ASTM D4956-09 specifications, fixed over 4mm thick ACP sheet supportedwith Back support frame of 25x25x3mm stainless steel angle of 304 grade, supported on a stainlesssteel pipe of 73.03 OD., 2.11 mm thk of 304 grade & surrounded by SS pipe of 38.10mm OD, 1.2 mm thkof 304 grade, firmly fixed to the ground by means of properly designed foundation with M20 gradecement concrete 45 cm X 45 cm X 60 cm , 60 cm below ground level as per approved drawing. Themessages (Legends , letter , numerals etc) and borders shall either be screen printed or of cut outfrom durable Transparent overlay film or cut out from same type of reflective sheeting as per TypeXI standards. Specification: as per IRC 67:2012. 10 years Warranty for Retro Reflective Sheetingfrom the original sheeting manufacturer & a certified copy of three years outdoor exposure reportfrom an independent test lab for the product offered shall be submitted by the contractor . (Bottomof the board shall be 900mm above ground level) Specification: IRC 67:2012.There shall be a stampbehind the ACP sheet carrying the name of the supplier, Name of sheeting Manufacturer, Type of retroreflective sheeting, Installation month & year as per clause 12.2 of IRC 67-2012.	NOS	32971.40	4	131885.6
31	MCGM Traffic FA-TR-13	Providing, Fabricating, Erecting on site Stop Sign Boards as per drawing no F2,Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box)shall be of size 600mm Octagon with red background & white lettering. The box shall be made of Hotdip galvanised MS angles of 25x25x3mm thick covered with 3 mm thick aluminum composite panel on bothsides of the box assembly; shall be fixed to the vertical pole. The box shall be fabricated bycovering the gap between the signs using 73mmx3mm thick hot dip galvanised MS plate all round theboard. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sidesconforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this boxusing transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall havewarranty of 10 years. The refection count shall not be less than 80% of its original reflectionafter 10 years. The vertical pipw shall be fixed to the ground by means of properly designedfoundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as perthe specification and directed by the Engineer	NOS	12452.00	10	124520

32	MCGM Traffic FA-TR-14	Providing, Fabricating, Erecting on site Toilet Indication Sign Boards as per drawingno F2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque(box) shall be of size 1050mmx600mm with fluorescent background & 300mm circle above the toiletsign'. The box shall be made of Hot dip galvanised MS angles of 25x25x3mm thick covered with 4 mmthick aluminum composite panel on both sides of the box assembly; shall be fixed to the verticalpole. The box shall be fabricated by covering the gap between the signs using 73mmx3mm thick hot dipgalvanised MS plate all round the board. The box shall be pasted with MICRO PRISMATIC GRADE retroreflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Lettersor borders to be pasted on this box using transparent electro cuttable film/Screen Printing. Thereflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than80% of its original reflection after 10 years. The vertical pipw shall be fixed to the ground bymeans of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mmabove ground. Complete as per the specification and directed by the Engineer.	NOS	12063.70	0	0
				Sub Total		**749589.6**
		Cost Centre G: Barricading during time of construction				
33	MCGM USOR R3-RW-7-36	Barricading the trenches on traffic flow side with 1.60 mtr. Height M.S.Angle post of 50 x 50 x 5 mm. buried in half the depth in drum of 20 ltrs. Capacit by 1:3:6 concrete spaced at 2.25 m centre to centre with 22 guage G.I. corrugated sheet of size 2.40 x 0.75 m. bolted to the M.S. Angle post and painted in yellow and black band with synthetic enamel paint as per traffic norms and as directed by the Engineers.	MTR	271.00	1000	271000
				Sub Total		**271000**

Cost Centre H: Ramps						
34	MCGM USOR R3-RW-10-29	Providing & laying M-40 C.C.avg. compressive strength (As per IRC 15-2002.N.1.6) procured from B.M.C. approved R.M.C. plant including use of approved make of plasticizer/ retarder & Contractor's water with ice flakes (if required) and transported by transit mixer and placing at work site. Compacting, finishing, initial curing by approved curing compound & Contractor's water and tarring the sides of slab with hot bitumen as specified and directed (w/c ratio 0.4 maximum)(vata for curring will be paid separately.) (MINIMUM CEMENT CONTENT 350 kg/m³	CUM	7962.00	0	0
35	MCGM USOR R3-RW-3-32	Providing & fixing in the carriageway, 80 mm thick Heritage paver interlocking white cement concrete pavers in red (Terra Cotta) Black, Brown lamen colour with vermeticular or any antiskid texture on top surface of approved pattern/ shape and colour having average crushing strength 50 N/mm² manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thick and consist cubical shape stone aggregate 8 mm sieve 100% passing and retain on 4.75 mm size sieve , silica sand and with pure iron oxide ultra voilete stabilized pigment @ 5% by weight of cement . The bottom layer should be 65 to 68 mm thick in gray cement having 12 mm sieve 100% passing aggregate as per technical specification rested on average 25 mm compacted thickness of uniformly graded river sand cushioning, compacted by proper capacity mechanical compactor with proper level grade and camber etc. complete as specified and as directed by the Engineer.	SQM	977.00	117.4	114699.8
36	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210). (For Tabletop)	CUM	2702.00	44.07	119077.14

37	MCGM USOR R3-RT-15-11	Fixing c.c tapered kerbs of type -2 as per Drg. EET&C/Gen/013/03Ty dt 11.12.03(Revised on 15.06.2006) available on site in C.M 1:2 painting the exposed surface of the kerbs with road marking paint grade-I (confirming to IS- 164) in two coats of approved colour including excavation (For Tabletop) in any material except rock / concrete road and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by	MTR	476.00	59.8	28464.8
38	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer.	SQM	908.00	176.4	160171.2
				Sub Total		**422412.94**

Cost Centre J: Miscelenous						
39	R3-RT-16-34	Supplying/ fixing of Two Way Raised Pavement Markers made of polycarbonate moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 13635 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 – DO III Dt 11.06. 1997 . The minimum reflective area of 13 Sq.Cm on each side and the slope to the base shall be 35 +/- 5 degree. Fixing will be without nails but by using epoxy resin based adhesive as per manufacturer's recommendation including site clearance etc and complete as directed by the engineer.'	MTR	433.00	1785	772905
40	R3-RT-16-36	Supplying/ fixing of Flexible Median Marker which shall be made of tough, high impact resistant, injection moulded, thermoplastic body with U shape structure with overall eight of minimum 180mm and shank depth of minimum 30mm and thickness not less than 2mm. The exposed body structure should be cornered rounded for better aesthetics. The outer part of the body shall have the Abrasion loss not less than 35 mm3 when tested accordance with DIN53505 and DIN53516 respectively and shall retain at least 70% of this value when it is subjected to accelerated weathering for 500hrs as per the ASTM G155 standard. The logo of the manufacturer shall be embossed on either side of the body in the injection moulding process. - The flexible median marker shall have U shaped florescent yellow colour retro-reflective sheeting with minimum exposed reflective area 285 mm2. The reflective sheeting should confirm to Type XI Florescent Yellow sheeting as per IRC 67 2022 and ASTM D4956-11.	NOS	437.00	0	0
41	R3-RW-7-18	Providing applying Yellow & Black road marking paint grade –I in 3-coats including single coat of approved brand primer after cleaning of old surface of any type divider with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	SQM	170.00	0	0
42	R3-RW-7-17	Providing applying Yellow & Black road marking paint grade –I in 3-coats including single coat of approved brand primer after cleaning of old surface of kerb stone with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	MTR	59.00	2611	154049
43	R3-RT-16-44	Providing and fixing rumblers of rubberised material	MTR	1472.00	296	435712
44	R3-ME-2-22-d	Supply & Laying of double wall corrugated (DWC) pipes of 90 mm OD / 76 mm I.D. HDPE for underground cable protection as per IS 14930 Part II. With necessary connecting socket/couplings, tees of some material at required depth up to 900 mm below road ground surface. backfilling of with light ramming is included in the scope.	MTR	291.00	500	145500
45	R3-RW-10-25	P/L R.M.C.M-20 C.C. procured from B.M.C. approved R.M.C. plant including use of approved makes of plasticizer/ retarder & transported by transit mixer & placing at worksite, compacting, finishing curing etc. by contractor's water & tarring the sides of form work with hot bitumen as specified & directed by the Engineer. (MINIMUM CEMENT CONTENT 260 Kg/m³.) (For Tree Bunds &	CUM	6489.00	8	51912
46	As per MMRDA Tender Document	Providing traffic wardens for regulation of traffic during construction as per the requirement of traffic police, etc. complete and as directed by Engineer-incharge.	NOS	300.00	180	54000
47	R3-RT-16-28	Circular treeguard:Providing, fabrication and fixing M.S.Circular treeguard with circular pipe of 10 gauge, 50mm Dia Circular vertica lpost ,40 mm Dia Horizontal support 18mm Dia. intermediate support with M.S. cap-(type-I) logo panel etc. including cutting welding, riveting, oil painting with navy blue colour or anyother approved colour shade as directed and fixing incement concrete foundation including cement concrete paver block lining including removal of surplus material/debris and restoring damaged portion of footpath etc. as directed. (Design details vide Drg.No.4F-A1.1, 4F- A1.2,A1.3 in the catalogue of street Furniture (Vol.I) published by B.M.C.)	NOS	19076.00	90	1716840
48	R3-RW-10-33	Providing and fixing of the precast TREE GUARD KERB of M-20 C.C. of height 230mm, width 100mm, Length 400mm, finished neatly, compacting, curing, formwork etc. including bedding of M-10 C.C. procured from B.M.C. approved R.M.C. plant,10cm.thick, filling of jointing in C.M. 1:2 and painting the exposed surface with 3 coats of road marking paint, Grade I of approved colours and quality including single coat of approved brand primer including excavation in C.C, asphalt etc. as specified and as directed.	MTR	501.00	700	350700
				Sub Total		**3681618**
				GRAND TOTAL		**2,12,55,483.12**

MULTI MODAL INTEGRATION FOR STATIONS ON MUMBAI METRO LINE 3						
NAME OF STATION:- BANDRA COLONY						
SCHEDULE B-5						
BOQ / SOR						
SR.NO.	Refference	ITEM DESCRIPTION	UNIT	RATE	FINAL QTY	AMOUNT
Cost Centre A: Excavation and Dismantling						
1	MCGM USOR R3-RW-4-03	Removing existing kerb stones, cleaning off old mortar, carting away up to a distance of 2 K.M. and stacking the same as directed.	RMT	42.00	561.7	23592.66
2	MCGM USOR R3-RW-3-22	Removing the paver blocks of any thickness.,size,& colour from carriage way OR footpath & transporting the same to ward depot OR any where in MCGM limit. The paver blocks shall be stacked neatly at specified location etc. complete as specified and as directed by the Engineer.	SQM	193.00	1545	298140.61
3	PWD-2.11 MORTH 301	Excavation for roadway in earth, soil of all sorts, sand, gravel or soft murum including dressing section to the required grade, camber and side slopes and conveying the excavated materials with all lifts upto a lead of 50m. and spreading for embankment or stacking as directed.	CUM	75.60	231.7	17517.73
4	MCGM BLDG R3-CS-DD-53	Disposal of building rubbish / malba / similar unserviceable,dismantled or waste materials by mechanical means including loading,transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all loads including all lifts involved.	CUM	109.00	231.7	25257.04
5	MCGM USOR R3-RW-7-28	Excavation and dismantaling of structures on roadway, dismantaling the existing Bus shelter including sorting out the dismantaling material, disposal of unservicable material with all leads etc. complete as directed by Engineer-in-charge.	NOS	7783.00	2	15566.00
6	MCGM USOR R3-RW-7-29	**Excavation and dismantling** of structures on roadway, shifting and relocatin of essential utilities, streetpoles,signals,roadsign boards,including taking necessary permission from the service providers /authorities, including payment of necessary deposits and supervision charges,shifting charges etc.complete as directed by Engineer-in-charge. **a) Street Poles**	NOS	1403.00	3	4209.00
7	MCGM USOR R3-RW-7-01	Removing & refixing traffic regulatory boards/busstop boards/street name boards etc. in M-10 cement concrete, complete as directed.	EA	1017.00	12	12204.00
8	MCGM USOR R3-SWD-35	Cutting down existing cement / lime concrete works by any means in pavement, bedding below foundation, coping, walls arches, stone, brick pavement coping etc. of any thickness of any height / depth above or below ground level etc. complete, as specified & as directed by Engineer in- Charge.	CUM	1703.00	380	647140.00
				Sub Total		**1043627.04**
Cost Centre B: Storm Water Drain						
9	MCGM USOR R3-RW-6-05	Raising or lowering rectangular manholes to the required level upto 30 cm including all materials, formwork, brick work and with 16cm thick M15 cement concrete coping under frame & cover of manhole including curing etc. complete, as specified and as directed.	EA	2803.00	162	454086.00
10	MCGM USOR R3-RW-6-03	Raising or lowering circular manholes to the required level upto 20 cm including all material, form work etc. with 16 cm thick cement concrete M-15 (1:2:4) coping under frame and cover of manhole, including curing etc. complete as specified and as directed	EA	1435.00	6	8610.00
11	MCGM USOR R3-SWD-74	Providing and laying 300 mm dia NP2 Class R.C.C. Hume pipes with Collar joints conforming to IS 458:2003 and laid on approved bedding as per IS 783:1985 (Reaff. 2010) including jointing the pipes and filleting with hemp and stiff mix of cement mortar 1:2, including testing of pipes at contractor's costs (in presence of munipal staff) as per IS 3597 etc. complete as specified & as directed by Engineer-in-Charge.	MTR	964.00	140	134960.00
12	MCGM USOR R3-SWD-183	Supplying and fixing 1.20m x 0.90m (2 nos of 0.60m x 0.90m) internal size rectangular D.I. air-tight hinged type cover and frame (weighing minimum 300 kg.) of material grade SG-500/7 as per IS 1865-1991with grade designation of C250 as per EN 124, specification no 3, including testing and inspection as per guidelines of IS specifications, including fixing with M-30 concrete and locking arrangement etc. complete as specified and as directed by Engineer-in-charge.	NOS	57686.00	10	576860.00
13	MCGM USOR R3-SWD-119	Providing and Constructing brick masonry inspection chamber rectangular 0.9 M x 0.60 M and 0.6 m deep on sewer with 230 mm brick walls in cement mortar 1:3 plastered both inside & outside with 20 mm thick cement mortar 1:2 and neat cement rendering so as to give a smooth surface, including 230 mm. cement concrete bedding (M 15) and cement concrete (M 15) in haunches and channels finished smooth with 20 mm thick cement mortar (1:1) and fixing C.I. heavy duty rectangular frame and cover of size 0.90 m x 0.45 m weighing minimum 270 kg. resting on 300 mm high C.C. cap in M 20 with (1:1) with cement plaster on both sides and necessary C.I. steps (weighing	EA	42303.00	2	84606.00

14	MCGM USOR R3-SWD-148	Supplying and fixing 0.90m x 0.60m internal size of rectangular C.I. air-tight cover and frame weighing minmum 270 of material grade of min. FG 150 conforming to IS 210:2009 and specification no SP-SWD-3 with the grade designation of HD 20 conforming to IS 1726:1991including testing as per CL 10 .	EA	33841.00	2	67682.00
				Sub Total		**1326804.00**
		Cost Centre C: Footpaths, Paver Blocks & Kerbstones				
15	MCGM BLDG. R3-CS-EW-12	Filling in plinth, floors, trenches, pits with approved contractor's murum in layers not exceeding 200mm including breaking of clods, watering, consolidating each layer in filled up area by rolling and compacting with roller/plate compactor as required to achieve not less than 97% modified proctor density conforming to relevant IS etc. complete as directed by Engineer Incharge. The rate includes necessary soil testing charges at laboratory & field as per relevant I.S. codes, royalty, octroi and other taxes if any. (Note: Borrow areas selected by CONTRACTOR shall be got approved from Engineer In Charge, before executing the work) 1) The rate includes the royalty and other taxes if any.	CUM	1038.00	0	0.00
11	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210).	CUM	2702.00	216	583626.60
12	MCGM USOR R3-RW-2-20	Providing & laying, spreading & compacting graded crushed stone agreegate to wet mix macadam satisfaction including premixing the material with water to OMC in mechanical mix (pug mill) carriage of mix material by tipper to site laying in uniform layer of 75mm to100mm(compacted thickness each)with sensor paver finisher on prepared subbase & compacting with vibratory roller (10 tonne) to achieve desired density including lighing, guarding barricating & maintenance of diversion etc. as directed by the Engineer, (Rebate for not using sensor paver should be taken,(metal gradation from 53mm to 75mm micron as per MCGM Road Specifications clause no.240).	CUM	3338.00	0	0.00
13	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer.	SQM	908.00	1623	1473329.88
14	MCGM USOR R3-RW-3-32	Providing & fixing in the carriageway, 80 mm thick Heritage paver interlocking white cement concrete pavers in red (Terra Cotta) Black, Brown lamen colour with vermeticular or any antiskid texture on top surface of approved pattern/ shape and colour having average crushing strength 50 N/mm² manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thick and consist cubical shape stone aggregate 8 mm sieve 100% passing and retain on 4.75 mm size sieve , silica sand and with pure iron oxide ultra voilete stabilized pigment @ 5% by weight of cement . The bottom layer should be 65 to 68 mm thick in gray cement having 12 mm sieve 100% passing aggregate as per technical specification rested on average 25 mm compacted thickness of uniformly graded river sand cushioning, compacted by proper capacity mechanical compactor with proper level grade and camber etc. complete as specified and as directed by the Engineer.	SQM	977.00	0	0.00

15	CPWD-DAR-2019 16.90	Providing and laying tactile tile (for vision impaired persons as per standards) of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS:15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.	SQM	1933.75	425.7	823120.03
16	MCGM USOR R3-RW-10-54	Providing and fixing of the precast kerb stone of height 325mm., base width 165mm., top width 115mm.in M20grade RMC supplied through MCGM approved plant or concrete mixed with use of weigh batch mixers as detailed in drawing u/No.Dy.Ch.E./Rds/93 /E.S. of 17 / 8 / 2005 ,excavation in any soil except rock, laying a leveling course of M 15 grade RMC 100mm. thick, to required slope (inclusive of form work) jointing in C.M.1:2 proportion flush to concrete surface, painting exposed surface with one coat of primer and two coats of 1st grade road marking paint in the yellow/white/black or any shade as directed. (Kerbstones shall be procurred from MCGM registered agencies).	MTR	549.00	0	0.00
	MCGM USOR R3-RW-10-45	Providing and fixing of Water Dished Channel size : 600 x 300 x 80mm, M-40 grade manufactured in vacuum wet press technology plant with excellent finish and sharp edges inclusive of excavation in any soil except rock, laying of leveling course of M-15 grade RMC 100 mm thick to required slope (inclusive of form work) jointing in 1:2 C:M. prop. flush to concrete surfaces as directed (Watertables shall be procured from BMC registered agencies).	MTR	805.00	550	442750.00
				Sub Total		**3322826.50**
		Cost Centre D: Lane Markings				
17	MCGM Traffic R3-RT-16-32	Providing and applying hot applied thermoplastic road marking material with glass beads extremely high skid resistance 2.5mm thick with primer coat (tack coat) for binding on cement concrete road/paver blocks surface. All labour materials with special aggregates etc, as specified in B.S. part-I & II 1989 and carrying out the marking on any road on center line and other lane marking continuous for intermittent 10cm or 15cm width and also pedestrian crossings stripes as well as spraying further quality of glass beads of type II uniformly into a mono layer on to the hot paint line in quick succession of the paint spraying operation @ 250gms per sq.mt. area as directed and as per B.S./M.O.S.T. specification in white/yellow colour	SQM	1002.75	0	0.00
18	MCGM Traffic R3-RT-16-07	Arrow marking for Route direction straight or right or left or straight & right or straight or left & lettering as per design in white or traffic yellow as specified and directed for speed limit upto 50 km/hrs.	NOS	1751.40	0	0.00
	PWD-6.12 b MORTH 301	Providing and applying Cold plastic paint two component rolled on surfacing material solvent free, high build two pack seamless, tough, skidresistant, material with has property of attaining 2.00 mm thickness in single coat application white (or as required colour) based on glass and colour retaining acralic cross linking resin system for coloured road surfacing including surface cleaning and cost of all material etc. complete. (All inclusive on bitumen or concrete surface) work shall carried out as per IRC 35-2015 clause 2.2	SQM	1581.30	0	0.00
				Sub Total		**0.00**
		Cost centre E: Street Furniture				
19	MCGM Traffic R3-RT-16-14	Circular Steel Bollards : Providing, fabricating and fixing circular Steel Bollards of 100mm dia circular Steel Pipe (of type 3F-A-1) as per the design incorporated in the Catalogue of Street Furniture (Vol-II). Published by MCGM, made of 10 Guage, 304 quality material with minimum nickel content not less than 10% (laboratory testing certificate shall be provided for used material) with steel pedestal and steel cap as per designs (3F-A1), (3F-A1.1), (3FA1.2) and (3F-A1-3) suitable to match the design adopted for surrounding railing including cutting, welding, riveting, polishing. The foundation shall either be with base plate of 200 x 200 x 6mm thick, 16 mm dia J Bolts or embedding pipe in foundation by providing 20mm Dia x 6 nos holdfasts embedded in 1:2:4 concrete as shown in drawing (3F-A1.1). inclusive of making good the damage portion of footpath with matching pavers blocks, tiles removing debris etc. complete as per specifications and as directed by the Engineer.	NOS	20104.35	132	2653774.20

20	CPWD DAR 2019 4.9	Precasting and placing in position 125 mm dia Bollards 600 mm high of required shape including providing M.S. Pipe Sleeve 50 mm dia 300 mm long in the Bollard and M.S. Pipes 40 mm dia and 450mm long with 150x150x6mm M.S. plate welded at bottom and embedded 150mm in cement concrete 1:3:6 (1 Cement : 3 coarse sand (zone-III) : 6 graded stone aggregate 20 mm nominal size), including necessary excavation of size 250x250x450mm deep for the same in bitumen/ concrete pavement at specified spacing	NOS	723.05	0	0.00
21	MCGM Garden GW-3-2-f	Ss Dust Bin (Refer sketch 10) Product area:0.76Sqm, Capacity in ltrs: 42.0 ltrs, Product height:0.92m	NOS	17265.00	0	0.00
22	MCGM Traffic R3-RT-16-06	Providing, fabrication and fixing Stainless Steel railing of 10 gauge of 304 grade stainless steel having minimum nickel content 10% (Laboratory testing certificate shall be provided for used material), dia. 40mm circular pipe railing with dia. 18mm circular intermediate support, dia. 65mm circular main supports with Stainless Steel pedestal(base-I type) and Stainless Steel cap (type- I) including cutting, welding, riveting, polishing as directed and fixing in cement concrete foundation as shown vide Sr.No. 2F-A1 in catalogue of Street Furniture (Vol.I) published by M.C.G.M. including removal of surplus material/debries and restoring damaged portion of footpath, etc. as directed.(with advertisement)	MTR	18079.00	350	6327650.00
				Sub Total		**8981424.20**
		Cost Centre F: Signages				
23	MCGM Traffic R3-RT-16-27	Providing, Fabricating, Erecting on site Facility Sign Boards (Taxi Stand/Police Station/Petrol Pump/Hospital and any other utilities) as per drawing no Facility Sign Drawing F1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mmx800mm. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than 80% of its original reflection after 10 years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer.	NOS	17598.00	0	0.00
24	MCGM Traffic R3-RT-16-24	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 900mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	17030.00	0	0.00
25	MCGM Traffic R3-RT-16-15	Providing, fixing & erecting on site Junction Name Board / Chowk (type 2S-D), as per the design incorporated in the catalogue of street Furniture published by M.C.G.M., Vertical pole shall be Hot dip galvanised M.S. Square pipe of size 100mm x 100mm x 3.5mm thick. Signage plaque (box) shall be of size 900mm x 900mm made of M.S.L angle frame of size 50mm x 50mm x 6mm thick covered with4mm thick aluminum composite panel on both sides, The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of R.C. 67 2012 CODE. Letters or borders to be pasted using transparent electro cuttable film. The reflective of sheet shall have guarantee of10 years. The refection count shall not be less than80%of its original reflection after10 years. The vertical pole shall be fixed by means of a properly designed foundation of size 750mmx750mmx900mm.	NOS	49656.00	0	0.00

26	MCGM Traffic R3-RT-16-25	Mandatory Board (600mm dia) hanging on pole – Providing, Fabricating, Erecting on site Mandatory & Cautionary Boards (of type 1S-A-3). As per the design incorporated in Street Furniture catalogue volume–II published by M.C.G.M., Signage plaque (box) shall be of size 600mm dia. Mounted on existing electrical pole with GL clamp. The box shall be made of4mm thick fibre reinforced plastic box covering both sides of pole. The cirCUMferential edge shall be closed with 3 mm thick FRP. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years shown in the drawing complete as per specification and as directed by the Engineer.	NOS	9765.00	0	0.00
	MCGM Traffic R3-RT-16-23	Providing, Fabricating, Erecting on site Mandatory Boards as per drawing no Mandatory Sign Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm dia. The box shall be pasted with micro prismatic grade retro reflective sheeting conforming to Type XI standards of IRC 67:2022. The retro reflective sheeting used on the signs shall consist of white sheeting having a smooth outer surface which has the property of retro reflection over its entire surface. It shall be weather resistant and exhibit colour fastness. A certificate of having the sheeting tested as per ASTM D 4956 from international and Govt. of India laboratory along with three years outdoor weathering to be submitted. The message (legends, letters, numerals, logos etc) along with the boards to be digitally printed on latex or equivalent platform using ink approved by the sheeting manufacturer conforming to UL 2801 and UL 2818. The digitally printed sheeting should be over laminated using UV clear overlay film. The retro reflective sheeting along with digital printing, ink and over laminate should be warranted for 10 years as per IRC 67 2022 clause 6.8 and 6.9. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. work complete as per specifications and as directed by the Engineer.	NOS	12624.00	6	75744.00
27	MCGM Traffic R3-RT-16-21	Providing, Fabricating, Erecting on site Direction Board as per figure no RT-16-21, Vertical poles shall be made of ISMC of 150x75 hot dip galvanised post, Signage plaque (box) shall be of size 1200mm x 1800mm made of hot dip galvanised ISMC 75mm x 40mm & bracing of 50x6mm hot dip galvanised channel. The sign board box shall be covered with4 mm aluminum composite panel on both sides of the box assembly & shall be fixed to the vertical pole. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical poles shall be fixed to the ground by means of properly designed foundation of size 750mm x 750mm x 900mm. Complete as per specification and direction by the Engineer. NOS 52403	NOS	79576.00	0	0.00
	MCGM Traffic R3-RT-16-43	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	14384.00	20	287680.00

	MCGM Traffic FA-TR-07	Providing and Fixing Single Arrow Street Name Sign Board of size1600mm x 900mm made out of retro reflective sheeting of micro prismatic grade conforming to IRC-67:2012 & Type XI standards of ASTM D4956-09 specifications, fixed over 4mm thick ACP sheet supportedwith Back support frame of 25x25x3mm stainless steel angle of 304 grade, supported on a stainlesssteel pipe of 73.03 OD., 2.11 mm thk of 304 grade & surrounded by SS pipe of 38.10mm OD, 1.2 mm thkof 304 grade, firmly fixed to the ground by means of properly designed foundation with M20 gradecement concrete 45 cm X 45 cm X 60 cm , 60 cm below ground level as per approved drawing. Themessages (Legends , letter , numerals etc) and borders shall either be screen printed or of cut outfrom durable Transparent overlay film or cut out from same type of reflective sheeting as per TypeXI standards. Specification: as per IRC 67:2012. 10 years Warranty for Retro Reflective Sheetingfrom the original sheeting manufacturer & a certified copy of three years outdoor exposure reportfrom an independent test lab for the product offered shall be submitted by the contractor . (Bottomof the board shall be 900mm above ground level) Specification: IRC 67:2012.There shall be a stampbehind the ACP sheet carrying the name of the supplier, Name of sheeting Manufacturer, Type of retroreflective sheeting, Installation month & year as per clause 12.2 of IRC 67-2012.	NOS	32971.40	4	131885.60
	MCGM Traffic FA-TR-08	Providing and Fixing Double Arrow Street Name Sign Board of size1950mm x 900mm made out of retro reflective sheeting of micro prismatic grade conforming to IRC-67:2012 & Type XI standards of ASTM D4956-09 specifications, fixed over 4mm thick ACP sheet supportedwith Back support frame of 25x25x3mm stainless steel angle of 304 grade, supported on a stainlesssteel pipe of 73.03 OD., 2.11 mm thk of 304 grade & surrounded by SS pipe of 38.10mm OD, 1.2 mm thkof 304 grade, firmly fixed to the ground by means of properly designed foundation with M20 gradecement concrete 45 cm X 45 cm X 60 cm , 60 cm below ground level as per approved drawing. Themessages (Legends , letter , numerals etc) and borders shall either be screen printed or of cut outfrom durable Transparent overlay film or cut out from same type of reflective sheeting as per TypeXI standards. Specification: as per IRC 67:2012. 10 years Warranty for Retro Reflective Sheetingfrom the original sheeting manufacturer & a certified copy of three years outdoor exposure reportfrom an independent test lab for the product offered shall be submitted by the contractor . (Bottomof the board shall be 900mm above ground level) Specification: IRC 67:2012.There shall be a stampbehind the ACP sheet carrying the name of the supplier, Name of sheeting Manufacturer, Type of retroreflective sheeting, Installation month & year as per clause 12.2 of IRC 67-2012.	NOS	38952.10	4	155808.40
	MCGM Traffic FA-TR-13	Providing, Fabricating, Erecting on site Stop Sign Boards as per drawing no F2,Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box)shall be of size 600mm Octagon with red background & white lettering. The box shall be made of Hotdip galvanised MS angles of 25x25x3mm thick covered with 3 mm thick aluminum composite panel on bothsides of the box assembly; shall be fixed to the vertical pole. The box shall be fabricated bycovering the gap between the signs using 73mmx3mm thick hot dip galvanised MS plate all round theboard. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sidesconforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this boxusing transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall havewarranty of 10 years. The refection count shall not be less than 80% of its original reflectionafter 10 years. The vertical pipw shall be fixed to the ground by means of properly designedfoundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as perthe specification and directed by the Engineer	NOS	12452.00	17	211684.00

	MCGM Traffic FA-TR-14	Providing, Fabricating, Erecting on site Toilet Indication Sign Boards as per drawingno F2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque(box) shall be of size 1050mmx600mm with fluorescent background & 300mm circle above the toiletsign'. The box shall be made of Hot dip galvanised MS angles of 25x25x3mm thick covered with 4 mmthick aluminum composite panel on both sides of the box assembly; shall be fixed to the verticalpole. The box shall be fabricated by covering the gap between the signs using 73mmx3mm thick hot dipgalvanised MS plate all round the board. The box shall be pasted with MICRO PRISMATIC GRADE retroreflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Lettersor borders to be pasted on this box using transparent electro cuttable film/Screen Printing. Thereflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than80% of its original reflection after 10 years. The vertical pipw shall be fixed to the ground bymeans of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mmabove ground. Complete as per the specification and directed by the Engineer.	NOS	12063.70	0	0.00
				Sub Total		**862802.00**
		Cost Centre G: Barricading during time of construction				
32	MCGM USOR R3-RW-7-36	Barricading the trenches on traffic flow side with 1.60 mtr. Height M.S.Angle post of 50 x 50 x 5 mm. buried in half the depth in drum of 20 ltrs. Capacit by 1:3:6 concrete spaced at 2.25 m centre to centre with 22 guage G.I. corrugated sheet of size 2.40 x 0.75 m. bolted to the M.S. Angle post and painted in yellow and black band with synthetic enamel paint as per traffic norms and as directed by the Engineers.	MTR	271.00	1000	271000.00
				Sub Total		**271000.00**
		Cost Centre H: Ramps				
33	MCGM USOR R3-RW-10-29	Providing & laying M-40 C.C.avg. compressive strength (As per IRC 15-2002.N.1.6) procured from B.M.C. approved R.M.C. plant including use of approved make of plasticizer/ retarder & Contractor's water with ice flakes (if required) and transported by transit mixer and placing at work site. Compacting, finishing, initial curing by approved curing compound & Contractor's water and tarring the sides of slab with hot bitumen as specified and directed (w/c ratio 0.4 maximum)(vata for	CUM	7962.00	0	0.00
34	MCGM BLDG. R3-CS-CW-35 (c)	Providing and fixing in position steel bars reinforcement of various diameters for R.C.C. pile, pile caps,footings,raft,retaining wall,shear wall, lift wall,foundations, slabs, beams, columns, canopies, staircases, newels, chajjas, lintels, pardies, coping, fins, arches, etc. as per detailed designs, drawings and bar bending schedules, including straightening,cutting, bending, hooking the bars, binding with wires or tack welding, supporting as required etc. all complete at all levels.	MT	80080.00	0	0.00
35	MCGM USOR R3-RW-3-32	Providing & fixing in the carriageway, 80 mm thick Heritage paver interlocking white cement concrete pavers in red (Terra Cotta) Black, Brown lamen colour with vermeticular or any antiskid texture on top surface of approved pattern/ shape and colour having average crushing strength 50 N/mm² manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thick and consist cubical shape stone aggregate 8 mm sieve 100% passing and retain on 4.75 mm size sieve , silica sand and with pure iron oxide ultra voilete stabilized pigment @ 5% by weight of cement . The bottom layer should be 65 to 68 mm thick in gray cement having 12 mm sieve 100% passing aggregate as per technical specification rested on average 25 mm compacted thickness of uniformly graded river sand cushioning, compacted by proper capacity mechanical compactor with proper level grade and camber etc. complete as specified and as directed by the Engineer.(For Table Top)	SQM	977.00	202.2	197549.40
36	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead	CUM	2702.00	40.25	108762.26
37	MCGM USOR R3-RT-15-11	Fixing c.c tapered kerbs of type -2 as per Drg. EET&C/Gen/013/03Ty dt 11.12.03(Revised on 15.06.2006) available on site in C.M 1:2 painting the exposed surface of the kerbs with road marking paint grade-I (confirming to IS- 164) in two coats of approved colour including excavation (For Tabletop) in any material except rock / concrete road and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer , The rate is inclusive of all lift and leads etc complete as directed	MTR	499.80	73.6	36785.28

39	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer. (For Ramps)	SQM	908.00	66.15	60064.20
				Sub Total		**403161.14**
		Cost Centre I: Street Light				
40	R3-ME-10-5	Galvanised Octagonal Poles - Design, engineering, manufacture, testing at factory, packing & forwarding, delivery to site, unloading and handling at site, assembly, installation, testing and commissioning of Octagonal street light poles with embeded junction box inclusive of terminals, 3Cx 2.5 sqmm PVC insulated multistranded flexible copper cable from Junction box to the luminaires, termination at both ends and other accessories. Foundation for the pole erection and all civil works shall be in the scope of the contractor.				
		Providing & erecting 9 m high (clear height) galvanized OCTAGONAL pole with foundation bolts having bottom of 130 mm A/F, top 70 mm A/F on provided foundation as per specification	NOS	96775	3	290325.00
41	R3-ME-10-6-c	Providing & erecting single arm standard bracket 1500MM long made up of 40 NB GI pipe suitable for octagonal pole of having top dia 70 MM as er specification	NOS	11222	3	33666.00
42	R3-ME-10-6-d	Providing & erecting double arm standard bracket 1500MM long made up of 40 NB GI pipe suitable for octagonal pole of having top dia 70 MM as per specification	NOS	17502	0	0.00
43	R3-ME-4-27-f	LED LIGHT FIXTURES (SP-ME-TS-21a): LED Street Light fittings:- Outdoor LED Street Light fittings – 100-120 W	NOS	7872	3	23616.00
44	R3-SWD-147	Supplying and fixing 0.90m x 0.45m internal size of rectangular C.I. air-tight cover and frame weighing minmum 225 of material grade of min. FG 150 conforming to IS 210:2009 and specification no -3 with the grade designation of HD 20 conforming to IS 1726:1991including testing as per CL 10 and inspection as per CL.11 of IS 1726:1991, as per specification as per Standard Specification no SP-SWD-3, etc. complete, as specified and	Each	31935	3	95805.00
45	R3-ME-6-6-b	Cement concrete foundation using M-20 cement concrete mix with J shaped foundation bolts where required (for Street Light)	CUM	9610	0.122	1167.62
				Sub Total		**444579.62**
		Cost Centre J: Miscelenous				
46	R3-RT-16-34	Supplying/ fixing of Two Way Raised Pavement Markers made of polycarbonate moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 13635 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 – DO III Dt 11.06. 1997 . The minimum reflective area of 13 Sq.Cm on each side and the slope to the base shall be 35 +/- 5 degree. Fixing will be without nails but by using epoxy resin based adhesive as per manufacturer's recommendation including site clearance etc and complete as directed by the engineer.'	NOS	454.65	1251	568767.15
40	R3-RT-16-36	Supplying/ fixing of Flexible Median Marker which shall be made of tough, high impact resistant, injection moulded, thermoplastic body with U shape structure with overall eight of minimum 180mm and shank depth of minimum 30mm and thickness not less than 2mm. The exposed body structure should be cornered rounded for better aesthetics. The outer part of the body shall have the Abrasion loss not less than 35 mm3 when tested accordance with DIN53505 and DIN53516 respectively and shall retain at least 70% of this value when it is subjected to accelerated weathering for 500hrs as per the ASTM G155 standard. The logo of the manufacturer shall be embossed on either side of the body in the injection moulding process. - The flexible median marker shall have U shaped florescent yellow colour retro-reflective sheeting with minimum exposed reflective area 285 mm2. The reflective sheeting should confirm to Type XI Florescent Yellow sheeting as per IRC 67 2022 and ASTM D4956-11.	NOS	437.00	0	0.00

41	R3-RW-7-18	Providing applying Yellow & Black road marking paint grade –I in 3-coats including single coat of approved brand primer after cleaning of old surface of any type divider with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	SQM	170.00	0	0.00
42	R3-RW-7-17	Providing applying Yellow & Black road marking paint grade –I in 3-coats including single coat of approved brand primer after cleaning of old surface of kerb stone with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	MTR	59.00	558	32922.00
43	R3-RT-16-44	Providing and fixing rumblers of rubberised material	MTR	1472.00	276	406272.00
44	R3-ME-2-22-d	Supply & Laying of double wall corrugated (DWC) pipes of 90 mm OD / 76 mm I.D. HDPE for underground cable protection as per IS 14930 Part II. With necessary connecting socket/couplings, tees of some material at required depth up to 900 mm below road ground surface. backfilling of with light ramming is included in the scope.	MTR	291.00	200	58200.00
45	R3-RW-10-25	P/L R.M.C.M-20 C.C. procured from B.M.C. approved R.M.C. plant including use of approved makes of plasticizer/ retarder & transported by transit mixer & placing at worksite, compacting, finishing curing etc. by contractor's water & tarring the sides of form work with hot bitumen as specified & directed by the Engineer. (MINIMUM CEMENT CONTENT 260 Kg/m³.) (For Tree Bunds &	CUM	6489.00	6	38934.00
46	As per MMRDA Tender Document	Providing traffic wardens for regulation of traffic during construction as per the requirement of traffic police, etc. complete and as directed by Engineer-incharge.	NOS	300.00	180	54000.00
47	R3-RT-16-28	Circular treeguard:Providing, fabrication and fixing M.S.Circular treeguard with circular pipe of 10 gauge, 50mm Dia Circular vertica lpost ,40 mm Dia Horizontal support 18mm Dia. intermediate support with M.S. cap-(type-I) logo panel etc. including cutting welding, riveting, oil painting with navy blue colour or anyother approved colour shade as directed and fixing incement concrete foundation including cement concrete paver block lining including removal of surplus material/debris and restoring damaged portion of footpath etc. as directed. (Design details vide Drg.No.4F-A1.1, 4F- A1.2,A1.3 in the catalogue of street Furniture (Vol.I) published by B.M.C.)	NOS	19076.00	10	190760.00
48	R3-RW-10-33	Providing and fixing of the precast TREE GUARD KERB of M-20 C.C. of height 230mm, width 100mm, Length 400mm, finished neatly, compacting, curing, formwork etc. including bedding of M-10 C.C. procured from B.M.C. approved R.M.C. plant,10cm.thick, filling of jointing in C.M. 1:2 and painting the exposed surface with 3 coats of road marking paint, Grade I of approved colours and quality including single coat of approved brand primer including excavation in C.C, asphalt etc. as specified and as directed.	MTR	501.00	80	40080.00
				Sub Total		**1389935.15**
				GRAND TOTAL		**1,80,46,159.64**

MULTI MODAL INTEGRATION FOR STATIONS ON MUMBAI METRO LINE 3						
NAME OF STATION:- BKC						
SCHEDULE B6						
BOQ / SOR						
SR.NO.	**Refference**	**ITEM DESCRIPTION**	**UNIT**	**RATE**	**FINAL QTY**	**FINAL AMOUNT**
Cost Centre A: Excavation and Dismantling						
1	MCGM USOR R3-RW-4-03	Removing existing kerb stones, cleaning off old mortar, carting away up to a distance of 2 K.M. and stacking the same as directed.	RMT	42.00	587.86	24690.12
2	MCGM USOR R3-RW-3-22	Removing the paver blocks of any thickness.,size,& colour from carriage way OR footpath & transporting the same to ward depot OR any where in MCGM limit. The paver blocks shall be stacked neatly at specified location etc. complete as specified and as directed by	SQM	193.00	1435.25	277003.25
3	PWD-2.11 MORTH 301	Excavation for roadway in earth, soil of all sorts, sand, gravel or soft murum including dressing section to the required grade, camber and side slopes and conveying the excavated materials with all lifts upto a lead of 50m. and spreading for embankment or	CUM	75.60	215.288	16275.7728
4	MCGM BLDG R3-CS-DD-53	Disposal of building rubbish / malba / similar unserviceable,dismantled or waste materials by mechanical means including loading,transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all loads including all lifts involved.	CUM	109.00	215.288	23466.392
5	MCGM USOR R3-RW-7-01	Removing & refixing traffic regulatory boards/busstop boards/street name boards etc. in M-10 cement concrete, complete as directed.	EA	1017.00	17	17289
6	MCGM USOR R3-SWD-35	Cutting down existing cement / lime concrete works by any means in pavement, bedding below foundation, coping, walls arches, stone, brick pavement coping etc. of any thickness of any height / depth above or below ground level etc. complete, as specified & as directed by Engineer in- Charge.	CUM	1703.00	17.28	29427.84
				Sub Total		388152.3748
Cost centre B: Storm Water Drains						
7	MCGM USOR R3-RW-6-03	Raising or lowering circular manholes to the required level upto 20 cm including all material, form work etc. with 16 cm thick cement concrete M-15 (1:2:4) coping under frame and cover of manhole, including curing etc. complete as specified and as directed	EA	1435.00	6	8610
8	MCGM USOR R3-RW-6-05	Raising or lowering rectangular manholes to the required level upto 30 cm including all materials, form work, brick work and with 16 cm thick M-15 cement concrete coping under frame & cover of manhole including curing etc. complete, as specified and as directed	EA	2803.00	105	294315
9	MCGM USOR R3-SWD-74	Providing and laying 300 mm dia NP2 Class R.C.C. Hume pipes with Collar joints conforming to IS 458:2003 and laid on approved bedding as per IS 783:1985 (Reaff. 2010) including jointing the pipes and filleting with hemp and stiff mix of cement mortar 1:2, including testing of pipes at contractor's costs (in presence of munipal staff) as per IS 3597 etc. complete as specified & as directed by Engineer-in-Charge.	MTR	964.00	140	134960
10	MCGM USOR R3-SWD-183	Supplying and fixing 1.20m x 0.90m (2 nos of 0.60m x 0.90m) internal size rectangular D.I. air-tight hinged type cover and frame (weighing minimum 300 kg.) of material grade SG-500/7 as per IS 1865-1991with grade designation of C250 as per EN 124, specification no 3, including testing and inspection as per guidelines of IS specifications, including fixing with M-30 concrete and locking arrangement etc. complete as specified and as directed by Engineer-in-Charge.	NOS	57686.00	16	922976
11	MCGM USOR R3-SWD-119	Providing and Constructing brick masonry inspection chamber rectangular 0.9 M x 0.60 M and 0.6 m deep on sewer with 230 mm brick walls in cement mortar 1:3 plastered both inside & outside with 20 mm thick cement mortar 1:2 and neat cement rendering so as to give a smooth surface, including 230 mm. cement concrete bedding (M 15) and cement concrete (M 15) in haunches and channels finished smooth with 20 mm thick cement mortar (1:1) and fixing C.I. heavy duty rectangular frame and cover of size 0.90 m x 0.45 m weighing minimum 270 kg. resting on 300 mm high C.C. cap in M 20 with (1:1) with cement plaster on both sides and necessary C.I. steps (weighing 5.40 kg each) staggered at 300 mm c /c including 75 mm wide vata all around the external portion of the chamber and the foundation concrete in C.M. 1: 1 etc. complete as per plan in and as per drawing (Dwg No MCGM/SWD/2013-03),etc complete as specified & as directed by Engineer-in-Charge.	EA	42303.00	4	169212
12	MCGM USOR R3-SWD-148	Supplying and fixing 0.90m x 0.60m internal size of rectangular C.I. air-tight cover and frame weighing minmum 270 of material grade of min. FG 150 conforming to IS 210:2009 and specification no SP-SWD-3 with the grade designation of HD 20 conforming to IS 1726:1991including testing as per CL 10 .	EA	33841.00	4	135364
				Sub Total		1665437
Cost Centre C: Footpaths, Paver Blocks & Kerbstones						
6	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210).	CUM	2702.00	134.955	364648.41
7	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer.	SQM	908.00	1057.41	960128.28

8	MCGM USOR R3-RW-10-54	Providing and fixing of the precast kerb stone of height 325mm., base width 165mm., top width 115mm.in M20grade RMC supplied through MCGM approved plant or concrete mixed with use of weigh batch mixers as detailed in drawing u/No.Dy.Ch.E./Rds/93 /E.S. of 17 / 8 / 2005 ,excavation in any soil except rock, laying a leveling course of M 15 grade RMC 100mm. thick, to required slope (inclusive of form work) jointing in C.M.1:2 proportion flush to concrete surface, painting exposed surface with one coat of primer and two coats of 1st grade road marking paint in the yellow/white/black or any shade as directed. (Kerbstones shall be procurred from MCGM registered agencies).	MTR	549.00	0	0
16	CPWD-DAR-2019-16.90	Providing and laying tactile tile (for vision impaired persons as per standards) of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS:15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. complete as per direction of Engineer-in-Charge.	SQM	1933.75	456.04	881867.35
17	MCGM USOR R3-RW-10-45	Providing and fixing of Water Dished Channel size : 600 x 300 x 80mm, M-40 grade manufactured in vacuum wet press technology plant with excellent finish and sharp edges inclusive of excavation in any soil except rock, laying of leveling course of M-15 grade RMC 100 mm thick to required slope (inclusive of form work) jointing in 1:2 C:M. prop. flush to concrete surfaces as directed (Watertables shall be procured from BMC registered agencies).	MTR	805.00	240	193200
				Sub Total		**2399844.04**
Cost Centre D: Lane Markings						
9	MCGM Traffic R3-RT-16-32	Providing and applying hot applied thermoplastic road marking material with glass beads extremely high skid resistance 2.5mm thick with primer coat (tack coat) for binding on cement concrete road/paver blocks surface. All labour materials with special aggregates etc, as specified in B.S. part-I & II 1989 and carrying out the marking on any road on center line and other lane marking continuous for intermittent 10cm or 15cm width and also pedestrian crossings stripes as well as spraying further quality of glass beads of type II uniformly into a mono layer on to the hot paint line in quick succession of the paint spraying operation @ 250gms per sq.mt. area as directed and as per B.S./M.O.S.T. specification in white/yellow colour	SQM	955.00	0	0
10	MCGM Traffic R3-RT-16-07	Arrow marking for Route direction straight or right or left or straight & right or straight or left & lettering as per design in white or traffic yellow as specified and directed for speed limit upto 50 km/hrs.	NOS	1668.00	0	0
20	PWD-6.12b MORTH 301	Providing and applying Cold plastic paint two component rolled on surfacing material solvent free, high build two pack seamless, tough, skidresistant, material with has property of attaining 2.00 mm thickness in single coat application white (or as required colour) based on glass and colour retaining acralic cross linking resin system for coloured road surfacing including surface cleaning and cost of all material etc. complete. (All inclusive on bitumen or concrete surface) work shall carried out as per IRC 35-2015 clause 2.2	SQM	1581.30	0	0
				Sub Total		**0**
Cost Centre E: Street Furniture						
11	MCGM Traffic R3-RT-16-14	Circular Steel Bollards : Providing, fabricating and fixing circular Steel Bollards of 100mm dia circular Steel Pipe (of type 3F-A-1) as per the design incorporated in the Catalogue of Street Furniture (Vol-II). Published by MCGM, made of 10 Guage, 304 quality material with minimum nickel content not less than 10% (laboratory testing certificate shall be provided for used material) with steel pedestal and steel cap as per designs (3F-A1), (3F-A1.1), (3FA1.2) and (3F-A1-3) suitable to match the design adopted for surrounding railing including cutting, welding, riveting, polishing. The foundation shall either be with base plate of 200 x 200 x 6mm thick, 16 mm dia J Bolts or embedding pipe in foundation by providing 20mm Dia x 6 nos holdfasts embedded in 1:2:4 concrete as shown in drawing (3F-A1.1). inclusive of making good the damage portion of footpath with matching pavers blocks, tiles removing debris etc. complete as per specifications and as directed by the Engineer.	NOS	19147.00	192	3676224
23	MCGM Traffic R2-RT-16-06	Providing, fabrication and fixing Stainless Steel railing of 10 gauge of 304 grade stainless steel having minimum nickel content 10% (Laboratory testing certificate shall be provided for used material), dia. 40mm circular pipe railing with dia. 18mm circular intermediate support, dia. 65mm circular main supports with Stainless Steel pedestal(base-I type) and Stainless Steel cap (type- I) including cutting, welding, riveting, polishing as directed and fixing in cement concrete foundation as shown vide Sr.No. 2F-A1 in catalogue of Street Furniture (Vol.I) published by M.C.G.M. including removal of surplus material/debries and restoring damaged portion of footpath, etc. as directed.(with advertisement)	MTR	18079.00	250	4519750
				Sub Total		**8195974**

Cost Centre F: Signages						
12	MCGM Traffic R3-RT-16-27	Providing, Fabricating, Erecting on site Facility Sign Boards (Taxi Stand/Police Station/Petrol Pump/Hospital and any other utilities) as per drawing no Facility Sign Drawing F1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mmx800mm. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than 80% of its original reflection after 10 years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer.	NOS	17598.00	0	0
13	MCGM Traffic R3-RT-16-25	Mandatory Board (600mm dia) hanging on pole – Providing, Fabricating, Erecting on site Mandatory & Cautionary Boards (of type 1S-A-3). As per the design incorporated in Street Furniture catalogue volume–II published by M.C.G.M., Signage plaque (box) shall be of size 600mm dia. Mounted on existing electrical pole with GL clamp. The box shall be made of4mm thick fibre reinforced plastic box covering both sides of pole. The cirCUMferential edge shall be closed with 3 mm thick FRP. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years shown in the drawing complete as per specification and as directed by the Engineer.	NOS	9765.00	0	0
26	MCGM Traffic R3-RT-16-23	Providing, Fabricating, Erecting on site Mandatory Boards as per drawing no Mandatory Sign Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Drawing M1, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm dia. The box shall be pasted with micro prismatic grade retro reflective sheeting conforming to Type XI standards of IRC 67:2022. The retro reflective sheeting used on the signs shall consist of white sheeting having a smooth outer surface which has the property of retro reflection over its entire surface. It shall be weather resistant and exhibit colour fastness. A certificate of having the sheeting tested as per ASTM D 4956 from international and Govt. of India laboratory along with three years outdoor weathering to be submitted. The message (legends, letters, numerals, logos etc) along with the boards to be digitally printed on latex or equivalent platform using ink approved by the sheeting manufacturer conforming to UL 2801 and UL 2818. The digitally printed sheeting should be over laminated using UV clear overlay film. The retro reflective sheeting along with digital printing, ink and over laminate should be warranted for 10 years as per IRC 67 2022 clause 6.8 and 6.9. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. work complete as per specifications and as directed by the Engineer.	NOS	12624.00	18	227232
14	MCGM Traffic R3-RT-16-21	Providing, Fabricating, Erecting on site Direction Board as per figure no RT-16-21, Vertical poles shall be made of ISMC of 150x75 hot dip galvanised post, Signage plaque (box) shall be of size 1200mm x 1800mm made of hot dip galvanised ISMC 75mm x 40mm & bracing of 50x6mm hot dip galvanised channel. The sign board box shall be covered with4 mm aluminum composite panel on both sides of the box assembly & shall be fixed to the vertical pole. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted using electro cuttable film. The reflectivity of sheet shall have guarantee of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical poles shall be fixed to the ground by means of properly designed foundation of size 750mm x 750mm x 900mm. Complete as per specification and direction by the Engineer. NOS 52403	NOS	79576.00	0	0
28	MCGM Traffic R3-RT-16-24	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 900mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	17030.00	0	0
29	MCGM Traffic R3-RT-16-43	Providing, Fabricating, Erecting on site Cautionary Boards as per Cautionary Sign Drawing No C2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box) shall be of size 600mm triangle. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this box using transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall have warranty of10years. The reflection count shall not be less than 80% of its original reflection after10years. The vertical pipe shall be fixed to the ground by means of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as per the specification and directed by the Engineer In Charge.	NOS	14384.00	20	287680

30	MCGM Traffic FA-TR-07	Providing and Fixing Single Arrow Street Name Sign Board of size1600mm x 900mm made out of retro reflective sheeting of micro prismatic grade conforming to IRC-67:2012 & Type XI standards of ASTM D4956-09 specifications, fixed over 4mm thick ACP sheet supportedwith Back support frame of 25x25x3mm stainless steel angle of 304 grade, supported on a stainlesssteel pipe of 73.03 OD., 2.11 mm thk of 304 grade & surrounded by SS pipe of 38.10mm OD, 1.2 mm thkof 304 grade, firmly fixed to the ground by means of properly designed foundation with M20 gradecement concrete 45 cm X 45 cm X 60 cm , 60 cm below ground level as per approved drawing. Themessages (Legends , letter , numerals etc) and borders shall either be screen printed or of cut outfrom durable Transparent overlay film or cut out from same type of reflective sheeting as per TypeXI standards. Specification: as per IRC 67:2012. 10 years Warranty for Retro Reflective Sheetingfrom the original sheeting manufacturer & a certified copy of three years outdoor exposure reportfrom an independent test lab for the product offered shall be submitted by the contractor . (Bottomof the board shall be 900mm above ground level) Specification: IRC 67:2012.There shall be a stampbehind the ACP sheet carrying the name of the supplier, Name of sheeting Manufacturer, Type of retroreflective sheeting, Installation month & year as per clause 12.2 of IRC 67-2012.	NOS	32971.40	5	164857
31	MCGM Traffic FA-TR-13	Providing, Fabricating, Erecting on site Stop Sign Boards as per drawing no F2,Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque (box)shall be of size 600mm Octagon with red background & white lettering. The box shall be made of Hotdip galvanised MS angles of 25x25x3mm thick covered with 3 mm thick aluminum composite panel on bothsides of the box assembly; shall be fixed to the vertical pole. The box shall be fabricated bycovering the gap between the signs using 73mmx3mm thick hot dip galvanised MS plate all round theboard. The box shall be pasted with MICRO PRISMATIC GRADE retro reflective base sheets on both sidesconforming to Type XI standards of I.R.C. 67 2012 CODE. Letters or borders to be pasted on this boxusing transparent electro cuttable film/Screen Printing. The reflectivity of sheet shall havewarranty of 10 years. The refection count shall not be less than 80% of its original reflectionafter 10 years. The vertical pipw shall be fixed to the ground by means of properly designedfoundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mm above ground. Complete as perthe specification and directed by the Engineer.	NOS	12452.00	12	149424
32	MCGM Traffic FA-TR-14	Providing, Fabricating, Erecting on site Toilet Indication Sign Boards as per drawingno F2, Vertical poles shall be Hot dip galvanised pipe of 65 NB, 3mm Wall thickness. Signage plaque(box) shall be of size 1050mmx600mm with fluorescent background & 300mm circle above the toiletsign'. The box shall be made of Hot dip galvanised MS angles of 25x25x3mm thick covered with 4 mmthick aluminum composite panel on both sides of the box assembly; shall be fixed to the verticalpole. The box shall be fabricated by covering the gap between the signs using 73mmx3mm thick hot dipgalvanised MS plate all round the board. The box shall be pasted with MICRO PRISMATIC GRADE retroreflective base sheets on both sides conforming to Type XI standards of I.R.C. 67 2012 CODE. Lettersor borders to be pasted on this box using transparent electro cuttable film/Screen Printing. Thereflectivity of sheet shall have warranty of 10 years. The refection count shall not be less than80% of its original reflection after 10 years. The vertical pipw shall be fixed to the ground bymeans of properly designed foundation of size 600mmx600mmx600mm below ground & 450mmx450mmx200mmabove ground. Complete as per the specification and directed by the Engineer.	NOS	12063.70	2	24127.4
					Sub Total	**853320.4**

Cost Centre G: Barricading during time of construction						
15	MCGM USOR R3-RW-7-36	Barricading the trenches on traffic flow side with 1.60 mtr. Height M.S.Angle post of 50 x 50 x 5 mm. buried in half the depth in drum of 20 ltrs. Capacit by 1:3:6 concrete spaced at 2.25 m centre to centre with 22 guage G.I. corrugated sheet of size 2.40 x 0.75 m. bolted to the M.S. Angle post and painted in yellow and black band with synthetic enamel paint as per traffic norms and as directed by the Engineers.	MTR	271.00	1000	271000
				Sub Total		**271000**
Cost Centre H: Ramps						
16	MCGM USOR R3-RW-10-29	Providing & laying M-40 C.C.avg. compressive strength (As per IRC 15-2002.N.1.6) procured from B.M.C. approved R.M.C. plant including use of approved make of plasticizer/ retarder & Contractor's water with ice flakes (if required) and transported by transit mixer and placing at work site. Compacting, finishing, initial curing by approved curing compound & Contractor's water and tarring the sides of slab with hot bitumen as specified and directed (w/c ratio 0.4 maximum)(vata for curring will be paid separately.) (MINIMUM CEMENT CONTENT 350 kg/m³	CUM	7962.00	0	0
17	MCGM USOR R3-RW-3-32	Providing & fixing in the carriageway, 80 mm thick Heritage paver interlocking white cement concrete pavers in red (Terra Cotta) Black, Brown lamen colour with vermeticular or any antiskid texture on top surface of approved pattern/ shape and colour having average crushing strength 50 N/mm² manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thick and consist cubical shape stone aggregate 8 mm sieve 100% passing and retain on 4.75 mm size sieve , silica sand and with pure iron oxide ultra voilete stabilized pigment @ 5% by weight of cement . The bottom layer should be 65 to 68 mm thick in gray cement having 12 mm sieve 100% passing aggregate as per technical specification rested on average 25 mm compacted thickness of uniformly graded river sand cushioning, compacted by proper capacity mechanical compactor with proper level grade and camber etc. complete as specified and as directed by the Engineer.	SQM	977.00	28.2	27551.4
18	MCGM USOR R3-RW-2-21	Providing & laying, spreading & compacting specified crushed stone in granular subbase course including premixing the material in mechanical mixer (pug mill or approved type), spreading of mixed material in uniform layer of 100mm to 75mm (compacted thickness each) with motor grader or paver on prepared murum surface & compacting with 10 tonne vibratory roller to achieve desired density including all material, labour, machinery, lighing barricating to all lifts & lead maintenance of diversion etc. complete (metal gradation from 75mm to 75mm micron as per MCGM Road Specifications clause no.210). (For Tabletop)	CUM	2702.00	20.295	54837.09
19	MCGM USOR R3-RT-15-11	Fixing c.c tapered kerbs of type -2 as per Drg. EET&C/Gen/013/03Ty dt 11.12.03(Revised on 15.06.2006) available on site in C.M 1:2 painting the exposed surface of the kerbs with road marking paint grade-I (confirming to IS- 164) in two coats of approved colour including excavation (For Tabletop) in any material except rock / concrete road and removing excavated material as per direction any where in city or suburban limit, cleaning the site etc as directed by engineer , The rate is inclusive of all lift and leads etc complete as directed	MTR	476.00	11.7	5569.2
21	MCGM USOR R3-RW-3-31	Providing & fixing in the carriageway /foothpath, 60mm thick Heritage paver interlocking white cement concrete pavers in red (terraCotta), black, brown, lemon color with vermeticular or any antiskid texture on top surface of approved pattern/shape and color,having average crushing strength not less than 40N/mm² as per technical specifications and ISCODE15658:2006 ; manufactured in double layer precast concrete blocks the top layer of paver block should be 12 to 15 mm thickand consisting of cubical shape stone aggregate 8mm sieve 100% passing and retained on 4.75 mm size sieve, silica sand and with pure iron oxide ultra voilet stabilized pigment @5% by weight of cement. The bottom layer should be 45to48 mm thick in grey cement having 12 mm sieve 100% passing aggregates as per technical specifications, rested on average compacted thickness of 25 mm well graded sand cushioning uniformly compacted with proper capacity mechanical compactor with required level, grade and camber etc.complete as specified and as directed by the Engineer.	SQM	908.00	107.1	97246.8
				Sub Total		**185204.49**

Cost Centre J: Miscelenous						
22	R3-RT-16-34	Supplying/ fixing of Two Way Raised Pavement Markers made of polycarbonate moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 13635 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 – DO III Dt 11.06. 1997 . The minimum reflective area of 13 Sq.Cm on each side and the slope to the base shall be 35 +/- 5 degree. Fixing will be without nails but by using epoxy resin based adhesive as per manufacturer's recommendation including site clearance etc and complete as directed by the engineer.'	MTR	433.00	1239	536487
40	R3-RT-16-36	Supplying/ fixing of Flexible Median Marker which shall be made of tough, high impact resistant, injection moulded, thermoplastic body with U shape structure with overall eight of minimum 180mm and shank depth of minimum 30mm and thickness not less than 2mm. The exposed body structure should be cornered rounded for better aesthetics. The outer part of the body shall have the Abrasion loss not less than 35 mm3 when tested accordance with DIN53505 and DIN53516 respectively and shall retain at least 70% of this value when it is subjected to accelerated weathering for 500hrs as per the ASTM G155 standard. The logo of the manufacturer shall be embossed on either side of the body in the injection moulding process. - The flexible median marker shall have U shaped florescent yellow colour retro-reflective sheeting with minimum exposed reflective area 285 mm2. The reflective sheeting should confirm to Type XI Florescent Yellow sheeting as per IRC 67 2022 and ASTM D4956-11.	NOS	437.00	0	0
41	R3-RW-7-18	Providing applying Yellow & Black road marking paint grade –I in 3- coats including single coat of approved brand primer after cleaning of old surface of any type divider with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	SQM	170.00	0	0
42	R3-RW-7-17	Providing applying Yellow & Black road marking paint grade –I in 3- coats including single coat of approved brand primer after cleaning of old surface of kerb stone with brushing by wire brush as per relevant I. S. codes to satisfaction of Engineer in charge etc. complete.	MTR	59.00	958	56522
43	R3-RT-16-44	Providing and fixing rumblers of rubberised material	MTR	1472.00	563	828736
44	R3-ME-2-22-d	Supply & Laying of double wall corrugated (DWC) pipes of 90 mm OD / 76 mm I.D. HDPE for underground cable protection as per IS 14930 Part II. With necessary connecting socket/couplings, tees of some material at required depth up to 900 mm below road ground surface. backfilling of with light ramming is included in the scope.	MTR	291.00	300	87300
45	R3-RW-10-25	P/L R.M.C.M-20 C.C. procured from B.M.C. approved R.M.C. plant including use of approved makes of plasticizer/ retarder & transported by transit mixer & placing at worksite, compacting, finishing curing etc. by contractor's water & tarring the sides of form work with hot bitumen as specified & directed by the Engineer. (MINIMUM CEMENT CONTENT 260 Kg/m³.) (For Tree Bunds &	CUM	6489.00	25	162225
46	As per MMRDA Tender Document	Providing traffic wardens for regulation of traffic during construction as per the requirement of traffic police, etc. complete and as directed by Engineer-incharge.	NOS	300.00	180	54000
47	R3-RT-16-28	Circular treeguard:Providing, fabrication and fixing M.S.Circular treeguard with circular pipe of 10 gauge, 50mm Dia Circular vertica lpost ,40 mm Dia Horizontal support 18mm Dia. intermediate support with M.S. cap-(type-I) logo panel etc. including cutting welding, riveting, oil painting with navy blue colour or anyother approved colour shade as directed and fixing incement concrete foundation including cement concrete paver block lining including removal of surplus material/debris and restoring damaged portion of footpath etc. as directed. (Design details vide Drg.No.4F-A1.1, 4F- A1.2,A1.3 in the catalogue of street Furniture (Vol.I) published by B.M.C.)	NOS	19076.00	40	763040
48	R3-RW-10-33	Providing and fixing of the precast TREE GUARD KERB of M-20 C.C. of height 230mm, width 100mm, Length 400mm, finished neatly, compacting, curing, formwork etc. including bedding of M-10 C.C. procured from B.M.C. approved R.M.C. plant,10cm.thick, filling of jointing in C.M. 1:2 and painting the exposed surface with 3 coats of road marking paint, Grade I of approved colours and quality including single coat of approved brand primer including excavation in C.C, asphalt etc. as specified and as directed.	MTR	501.00	330	165330
				Sub Total		2653640
				GRAND TOTAL		**1,66,12,572.30**