



# Solapur City Development Corporation Limited

## TENDER FOR EXECUTION

Revision-Nil

Particulars	Details
Client	Solapur City Development Corporation Limited, Solapur, INDIA
Project Name	Implementation of projects under Smart City Mission in Solapur City
Assignment Name	Appointment of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with an approximate total length of 10.8 km road/ street/ footpath/junction/related utilities on Project Sites at Solapur City under Smart Cities Mission
Document Issue Date	24/08/2018
Document Number	2018-19/09

Solapur City Development Corporation Limited,

New Planning Office, Near Milk Dairy, Saat Rasta, Solapur, 413003,  
Maharashtra, India.

August 2018

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## Detailed E-Tender Notice

**Notice No. 2018-19/09**

*Dated: [24-08-2018]*

*[This RFP is meant for the exclusive purpose of submitting the e-Bid in accordance with the terms and conditions specified herein, and this RFP shall not be transferred, reproduced or otherwise used for purposes other than that for which it is specifically issued]*

Online Digitally Signed Percentage Rate Basis Tender of below mentioned work is invited By SOLAPUR CITY DEVELOPMENT CORPORATION LIMITED (SCDCL), SOLAPUR from reputed and experienced and registered contractors with PWD GoM, CPWD or such govt. organization. The Bid Documents are available on <https://mahatenders.gov.in> from 24/08/2018, 10.00am to 17/09/2018, 3:00pm.

Sr. No.	Information	Details
1.	Project	Appointment of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with an approximate total length of 10.8 km road/ street/ footpath/junction/related utilities on Project Sites at Solapur City under Smart Cities Mission
2.	RFP Reference No.	Tender No: 2018-19 /09
3.	Publication of Request for Proposal	24/08/2018
4.	Estimated Project Cost	INR 87,73,64,569
5.	Bid Document Fee	INR 11,800/- (inclusive of GST)
6.	EMD	0.5 % of estimated cost INR 43,86,900
7.	Performance Bank guarantee	10% of Contract value on award of Contract 0.5% - EMD+2% Initial Security Deposit+7.5% deducted at each RA bill
8.	Last date of Purchase of Tender	17/09/2018 till 3.00PM
9.	Pre-Bid Conference	04/09/2018 at 3:00 PM at SCDCL Office, Solapur.
10.	Last Date to send in Requests for Clarifications/Modifications	04/09/2018
11.	Date of issue of Clarifications/Modifications by SCDCL	To be notified
12.	Bid Submission Date	17/09/2018

13.	Bid Validity Period	120 days from submission date
14.	Joint Ventures etc.	JVs ( <b>Incorporated JV as per Company Act 2013</b> ) shall be allowed subject to absolute and complete compliance with terms & conditions of the RFP; JVs not allowed
15.	Opening of the Technical Bid	18/09/2018
16.	Declaration of eligible/qualified Bidders	To be notified
17.	Opening of Financial Bids	To be notified
18.	Letter of Award	To be notified
19.	Submission by Bidder	The Selected Bidder shall be required to comply with the following requirements: within seven (7) days of being informed of selection Submit an original solvency certificate of at least 5% of the Bidder's Estimate within fifteen (15) days of receipt of LOI: Submission of confirmation and acceptance of LOI. ii) Submission of Performance Bank Guarantee. iii) Payment of Security Deposit.
20.	Signing of Agreement	Subject to compliance of the above and other terms of RFP, the Master Procurement, Construction & Maintenance Agreement shall be signed within 15 (fifteen) days of receipt by Selected Bidder of proforma Master Procurement, Construction & Maintenance Agreement.
21.	Contact Person and Email Address	The Chief Executive Officer Solapur City Development Corporation Limited, New Planning Office, Near Milk Dairy, Saat Rasta, Solapur-413003. Tel: -0217-2740300, Fax: -0217-2740306 E-mail: - solapurcitydcl@gmail.com

The complete Bidding Document and all other details including any extensions, clarifications, amendments, corrigendum, addendum etc., will be uploaded only on the website of <https://mahatenders.gov.in>, and may not be published in any newspaper or by any other medium, therefore, Bidders are advised to regularly visit the aforementioned website to keep themselves abreast of, updated with and privy to the latest information. The Prospective Bidders should not be blacklisted by Solapur Municipal Corporation or any other government or statutory body and the bidder shall submit a registered affidavit to this effect.

Bids shall be submitted in the formats specified in this RFP, as prescribed in this RFP and along with EMD which will be physically submitted to the "CEO, Solapur City Development

Corporation Limited ("SCDCL"), New Planning Office, Near Milk Dairy, Saat Rasta, Solapur, 413003, Maharashtra, India after the last date of submission of bids but within 2 working days.

Documents which are required to be submitted along with the Bid may be scanned with a minimum resolution of 200 dpi in monochrome (black and white).

This RFP shall be regarded as an invitation to an offer to all the prospective bidders and would be valid and binding on those bidders who have given an offer by submitting their respective Bids with all the requisite documents and annexures as stipulated.

**Notes:**

- The changes / corrigendum, if any will only be published on official website and/or communicated through emails.
- Right to reject any or all bids without assigning any reasons thereof are reserved by the SCDCL.
- Bidders must submit Technical Bid and Financial Bid online and technical bid offline as well.
- All requisite information required for the submission of documents is available in the above said website.
- For any queries related to tender documents, please contact to SCDCL.

Chief Executive Officer,  
SCDCL, Solapur

## Disclaimer

The information contained in this Request for Proposal document (“**RFP**” or “**Tender**” used colloquially and interchangeably) or subsequently provided to the Bidders, which can be a single entity or a Joint Venture / proposed Joint Venture, by Solapur Smart City Development Corporation Limited (hereafter referred to as “**SCDCL**” or “**Client**”) or any of its employees or advisors, is provided to the Bidders on the terms and conditions set out in this RFP and any other terms and conditions subject to which such information is provided.

This RFP is neither an agreement and nor is an offer to any party. The purpose of this RFP is to provide the Bidders or any other person with information to prepare their bids and formulate their financial offers (“**Bid**”). This RFP includes statements, which reflect various assumptions and assessments arrived at by SCDCL in relation to this scope.

This RFP does not purport to contain all the information that each Bidder may require. This RFP may not be appropriate for all persons, and it is not possible for SCDCL, and/or its employees or advisors, to consider the objectives, technical expertise and particular needs of each Bidder. The assumptions, assessments, statements and information contained in the Bidding documents are made in consideration of the intended objectives of the Project, and may not be complete, accurate or adequate. Each Bidder must therefore conduct its own analysis of the information contained in this RFP and seek its own professional advice from appropriate sources.

Information provided in this RFP to the Bidder is on a wide range of matters, some of which may depend upon interpretation of law. The information given is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. SCDCL accepts no responsibility for the accuracy or otherwise for any interpretation of opinion on law expressed herein.

SCDCL and its employees and advisors make no representation or warranty and shall incur no liability to any person, including the Bidder under law, statute, rules or regulations or tort, the principles of restitution or unjust enrichment or otherwise for any loss, cost, expense or damage which may arise from or be incurred or suffered on account of anything contained in this RFP or otherwise, including the accuracy, reliability or completeness of the RFP, and any assessment, assumption, statement or information contained therein or deemed to form part of this RFP or arising in any way in this Bidding Process.

SCDCL accepts no liability of any nature, whether resulting from negligence or otherwise, howsoever caused, arising from reliance of any Bidder upon the statements contained in this RFP. SCDCL may in its absolute discretion, but without being under any obligation to do so, amend or supplement the information in this RFP.

The issue of this RFP does not imply that SCDCL is bound to select a Bidder or to appoint a Bidder, for implementation and SCDCL reserves the right to reject all or any of the Bidders or Bids without assigning any reason whatsoever.

The Bidder shall bear all its costs associated with or relating to the preparation and submission of its Bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by SCDCL or any other costs incurred in connection with or relating to its Bid. All such costs and expenses shall remain firmly, solely and absolutely vest with the Bidder and SCDCL shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation for submission of the Bid, regardless of the conduct or outcome of the Bidding Process.

In the event of delay in completion of the Project, due to land acquisition, SCDCL at its sole discretion may reallocate the unutilized funds for the Project, to carry out the Works, at any new site.

The price estimation stated herein are based on estimations of the dimensions of the subject road and may vary as per actual road length and width available on ground.

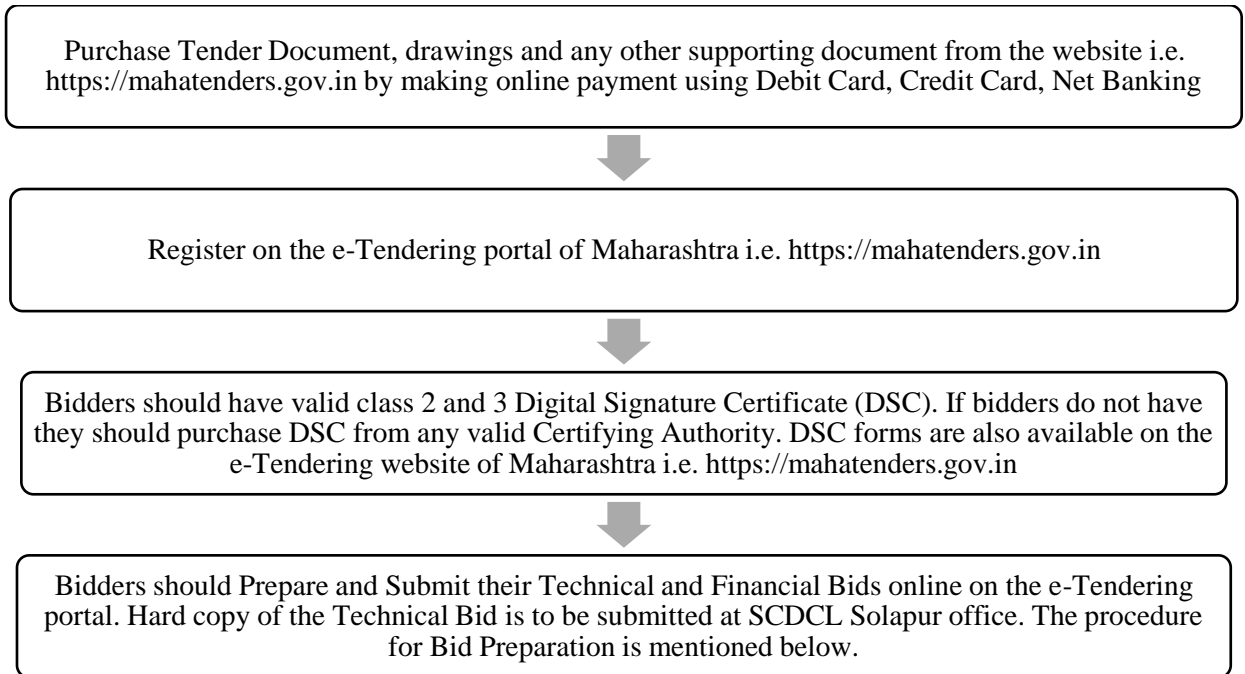
The CEO, SCDCL reserves the rights to change the Scope of Work as and when required in consultation with the Solapur Municipal Corporation.



## SECTION 1. E-Tendering guidelines to Bidders:

1.1 Guidelines to Contractors/Bidders on the operations of Electronic Tendering System of SCDCL

**E-Tendering Portal - <https://mahatenders.gov.in>**



1.2 Pre-requisites to participate in the Tenders processed by SCDCL

1.2.1 Registration of Contractors on Electronic Tendering System of SCDCL

The Contractors interested in participating in the e-Tendering process of SCDCL shall be required to enrol on the Electronic Tendering System to obtain User ID and Password.

After submission of application for enrolment on the System, the application information shall be verified by the Authorized Representative of the Service Provider. If the information is found to be complete, the enrolment submitted by the Vendor shall be approved.

The Contractors may obtain the necessary information on the process of enrolment either from Helpdesk Support Team or may visit the information published under the link Enrol under the section E-Tendering Toolkit for Bidders on the Home Page of the Electronic Tendering System.

1.2.2 Obtaining a Digital Certificate:

The Bid Data that is prepared online is required to be encrypted and the hash value of the Bid Data is required to be signed electronically using a Digital Certificate (Class – II or Class – III). This is required to maintain the security of the Bid Data and to establish the identity of the Contractor transacting on the System.

Bid data / information for a particular Tender may be submitted only using the Digital Certificate which is used to encrypt the data / information and sign the hash value during the Bid Preparation and Hash Submission stage. In case, during the process of preparing

and submitting a Bid for a particular Tender, the Contractor loses his / her Digital Signature Certificate (i.e. due to virus attack, hardware problem, operating system problem); he / she may not be able to submit the Bid online. Hence, the Users are advised to store his / her Digital Certificate securely and if possible, keep a backup at safe place under adequate security to be used in case of need.

In case of online tendering, if the Digital Certificate issued to an Authorized User of a Partnership Firm is used for signing and submitting a bid, it will be considered equivalent to a no objection certificate / power of attorney to that User to submit the bid on behalf of the Partnership Firm. The Partnership Firm must authorize a specific individual via an authorization certificate signed by a partner of the firm (and in case the applicant is a partner, another partner in the same form is required to authorize) to use the digital certificate as per Indian Information Technology Act, 2000.

Unless the Digital Certificate is revoked, it will be assumed to represent adequate authority of the Authority User to bid on behalf of the Firm for the Tenders processed on the Electronic Tender Management System of SCDCL of Maharashtra as per Indian Information Technology Act, 2000. The Digital Signature of this Authorized User will be binding on the Firm. It shall be the responsibility of Partners of the Firm to inform the Certifying Authority or Sub Certifying Authority, if the Authorized User changes, and apply for a fresh Digital Signature Certificate. The procedure for application of a Digital Signature Certificate will remain the same for the new Authorized User.

The same procedure holds true for the Authorized Users in a Private / Public Limited Company. In this case, the Authorization Certificate will have to be signed by the Director of the Company or the Reporting Authority of the Applicant.

For information on the process of application for obtaining Digital Certificate, the Contractors may visit the section Digital Certificate on the Home Page of the Electronic Tendering System.

1.3 There is no registration fee applicable for login. However, the Bidder(s) shall have to pay for the RFP processing fee ("Tender Fee") through an electronic payment mode as described.

#### 1.4 Recommended Hardware and Internet Connectivity

To operate on the Electronic Tendering System, the Contractors are recommended to use Computer System with at least 1 GB of RAM and broadband connectivity with minimum 512 kbps bandwidth. However, Computer Systems with latest i3 / i5 Intel Processors and 3G connection is recommended for better performance.

##### a) Set up of Computer System for executing the operations on the Electronic Tendering System

To operate on the Electronic Tendering System of SCDCL of Maharashtra, the Computer System of the Contractors is required be set up. The Contractors are required to install Utilities available under the section Mandatory Installation Components on the Home Page of the System.

The Utilities are available for download freely from the above-mentioned section. The Contractors are requested to refer to the E-Tendering Toolkit for Bidders available online on the Home Page to understand the process of setting up the System, or alternatively, contact the Helpdesk Support Team on information / guidance on the process of setting up the System.

b) **Payment for Service Provider Fees:**

In addition to the Pre-bid / Pre-qualification / Main Bidding process fees payable to SCDCL, the Contractors will have to pay Service Providers Fees of Rs. 1038/- through online payments gateway service available on Electronic Tendering System. For the list of options for making online payments, the Contractors are advised to visit the link E-Payment Options under the section E-Tendering Toolkit for Bidders on the Home Page of the Electronic Tendering System.

**1.5 Bid Submission Date**

1.5.1 Bids must be received by the Client at the web portal mentioned in the RFP on or before [17-09-2018] up to [15.00] hrs (Indian Standard Time) ("**Bid Submission Date**").

1.5.2 The Client may, at his discretion, extend the Bid Submission Date by issuing an addendum in respect thereof.

1.5.3 In the event of Bid Submission Date being declared a holiday for the Client, the deadline for submission of Bid shall be the next working day.

**1.6 Late Bids**

Any Bid received by the Client after the Bid Submission Date will be summarily rejected by the Client.

1.7 Steps to be followed by Contractors to participate in the E-Tenders processed by SCDCL

c) **Preparation of online Briefcase:**

All Contractors enrolled on the Electronic Tendering System of Maharashtra are provided with dedicated briefcase facility to store documents / files in digital format. The Contractors can use the online briefcase to store their scanned copies of frequently used documents / files to be submitted as a part of their bid response. The Contractors are advised to store the relevant documents such as Registration Certificate, PAN Card, GST Registration Certificate, Services Tax Registration Certificate, Professional Tax Registration Certificate, EPF Registration Certificate, Certificates of Works completed, ownership of Plant and Equipment in the briefcase, etc. to avoid scanning / uploading process for each Tender.

In case, the Contractors have multiple documents under the same type (e.g. multiple Work Completion Certificates) as mentioned above, the Contractors advised to either create a single .pdf file of all the documents of same type or compress the documents in a single compressed file in .zip or .rar formats and upload the same

It is mandatory to upload the documents using the briefcase facility. Therefore, the Contractors are advised to keep the documents ready in the briefcase to ensure timely bid preparation.

Note: Uploading of documents in the briefcase does not mean that the documents are available to SCDCL at the time of Tender Opening stage unless the documents are specifically attached to the bid during the online Bid Preparation and Hash Submission stage as well as during Decryption and Re-encryption stage.

d) Online viewing of Detailed Notice Inviting Tenders:

The Contractors can view the Detailed Tender Notice along with the Time Schedule (Key Dates) for all the Live Tenders released by SCDCL on e-Tendering Portal on <https://mahatenders.gov.in> under the section Recent Online Tender.

e) Download of Tender Documents:

The Tender Documents are available for purchase and downloading by Contractors from the website i.e. <https://mahatenders.gov.in>

f) Online Bid Preparation and Submission of Bid Hash (Seal) of Bids:

Submission of Bids will be preceded by online bid preparation and submission of the digitally signed Bid Hashes (Seals) within the Tender Time Schedule (Key Dates) published in the Detailed Notice Inviting Tender. The Bid Data is to be prepared in the templates provided by SCDCL. The templates may be either form based, extensible tables and / or up-loadable documents. In the form based type of templates and extensible table type of templates, the Contractors are required to enter the data and encrypt the data using the Digital Certificate.

In the up-loadable document type of templates, the Contractors are required to select the relevant document / compressed file (containing multiple documents) already uploaded in the briefcase.

**Notes:**

- i. The Contractors upload a single document or a compressed file containing multiple documents against each up loadable option.
- ii. The Hashes are the thumbprint of electronic data and are based on one – way algorithm. The Hashes establish the unique identity of Bid Data.
- iii. The bid hash values are digitally signed using valid Class – II or Class – III Digital Certificate issued by any Certifying Authority. The Contractors are required to obtain Digital Certificate in advance.
- iv. After the hash value of bid data is generated, the Contractors cannot make any change / addition in its bid data.
- v. This stage will be applicable during Technical and Financial Bidding Processes.

g) Close for Bidding (Generation of Super Hash Values):

After the expiry of the cut – off time of Bid Preparation and Hash Submission stage to be completed by the Contractors has lapsed, the Tender will be closed by the Tender Authority.

The Tender Authority from SCDCL shall generate and digitally sign the Super Hash values (Seals).

This stage will be applicable during both Technical and Financial Bidding Processes.

a) Decryption and Re-encryption of Bids (submitting the Bids online):

i In case of Online Bid Submission (Technical and Financial)

After making online payment towards Fees of Service Provider, the Contractors are required to submit the hard copy of the Technical Bid (only) with SCDCL at the below mentioned address:

Solapur City Development Corporation Limited New Planning Office, Near Milk Dairy, Saat Rasta, Solapur-413003.

The Contractors are required to decrypt their bid data using their Digital Certificate and immediately re-encrypt their bid data using the Public Key of the Tendering Authority of the SCDCL. The Public Key of the Tendering Authority is attached to the Tender during the Close for bidding stage.

The details of the Earnest Money Deposit and Processing Fees shall be verified and matched during the Main Tender Opening event.

**Note:** At this time, the Contractors are also required to upload the files for which they generated the Hash values during the Bid Preparation and Hash Submission stage.

The Bid Data and Documents of only those Contractors who have submitted their Bid Hashes (Seals) within the stipulated time (as per the Tender Time Schedule), will be available for decryption and re-encryption and to upload the relevant documents from Briefcase. A Contractor who has not submitted his Bid Preparation and Hash Submission stage within the stipulated time will not be allowed to decrypt / re-encrypt the Bid data / submit documents. This stage will be applicable during both, Pre-bid / Pre-qualification and Financial Bidding Processes.

ii Short listing of Contractors for Financial Bid Opening:

The Tendering Authority will first open the Qualification Bid, Qualification document/ Technical Documents etc. on the prescribed date and time as mentioned in bidding data Volume-II and after scrutinizing these documents will shortlist the Contractors who are eligible for Financial Bid opening. The shortlisted Contractors will be intimated by email.

iii Opening of the Financial Bids:

The qualified Contractors may remain present in the Office of the Tender Opening Authority at the time of opening of Financial Bids as intimated.

iv Tender Schedule (Key Dates):

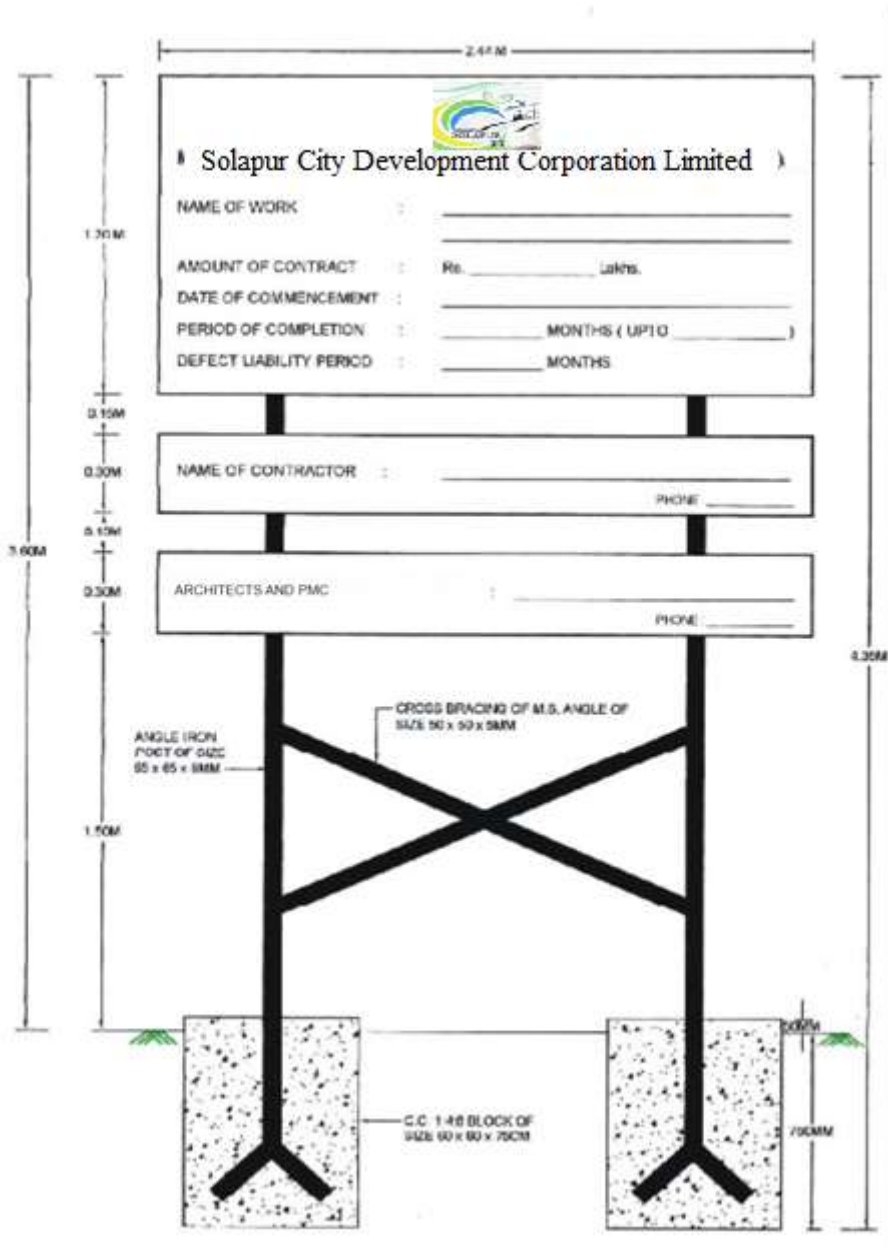
The Contractors are strictly advised to follow the Dates and Times allocated to each stage under the column Vendor Stage as indicated in the Tender Schedule. All the online activities are time tracked and the Electronic Tendering System enforces time-locks that ensure that no activity or transaction can take place outside the Start and End Dates and Time of the stage as defined in the Tender Schedule.

At the sole discretion of the Tender Authority, the Tender schedule of the Tender stages may be extended.

**ACKNOWLEDGEMENT:**

It is expressly understood that the party has subscribed to this document with an express understanding that they will use this document only for the sole purpose of participating in the Bidding Process for the work of **Appointment of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with an approximate total length of 10.8 km road/ street/ footpath/junction/related utilities on Project Sites at Solapur City under Smart Cities Mission**, and must not be used for any other purpose. This document must not be passed to a third party except to professional advisers assisting with the Bid submission, if any. The document shall not be reproduced or communicated, in whole or in part, and its contents shall not be distributed in written or oral form without prior explicit written permission from the Client.

## NOTICE BOARD TO BE INSTALLED ON SITE



## **SECTION 2. INTRODUCTION**

### **2.1. Background**

Ministry of Urban Development, Government of India (MoUD) launched the Smart City Mission, the Mission Transform-Nation, on 25th June 2015. It was declared that 100 Smart Cities will be developed in the country through a competitive challenge. A two-stage selection process was adopted for selecting 100 cities across the country to participate in the Smart Cities Challenge. Number of cities to be developed as Smart Cities from the States were fixed based on a pre-determined formula by the MoUD. Under the Stage I of the selection process, States Governments were requested to nominate cities (pre-determined number of cities) from the respective states to participate in the Stage-II of the selection process which is competitive i.e. the Smart Cities Challenge. During the Smart Cities Challenge, 100 cities, as nominated by the respective state governments, were required to prepare the Smart City Proposal (SCP) and compete among themselves. At the end of the Smart Cities Challenge (Round-1), the top 20 proposals from the cities shall be funded by the MoUD in the first year of the Mission.

The Government of Maharashtra following a due selection process, nominated Solapur as one of the 10 cities from the State to participate in this Smart Cities Challenge, the Stage-II of the selection process. The proposal preparation process for Solapur was initiated in August 2015 and was concluded on 15th December 2015, the last date of proposal submission as stipulated by the MoUD. In all 97 cities from across the India submitted their SCPs and these were evaluated by MoUD engaging Personnel. The evaluation process was concluded and the final list of the top 20 winning proposals was announced on 28th January 2016 by the Union Minister for Urban Development. Proposal of Solapur was one of the top 20 winning proposals from the country and is selected to receive the funding from MoUD during first year.

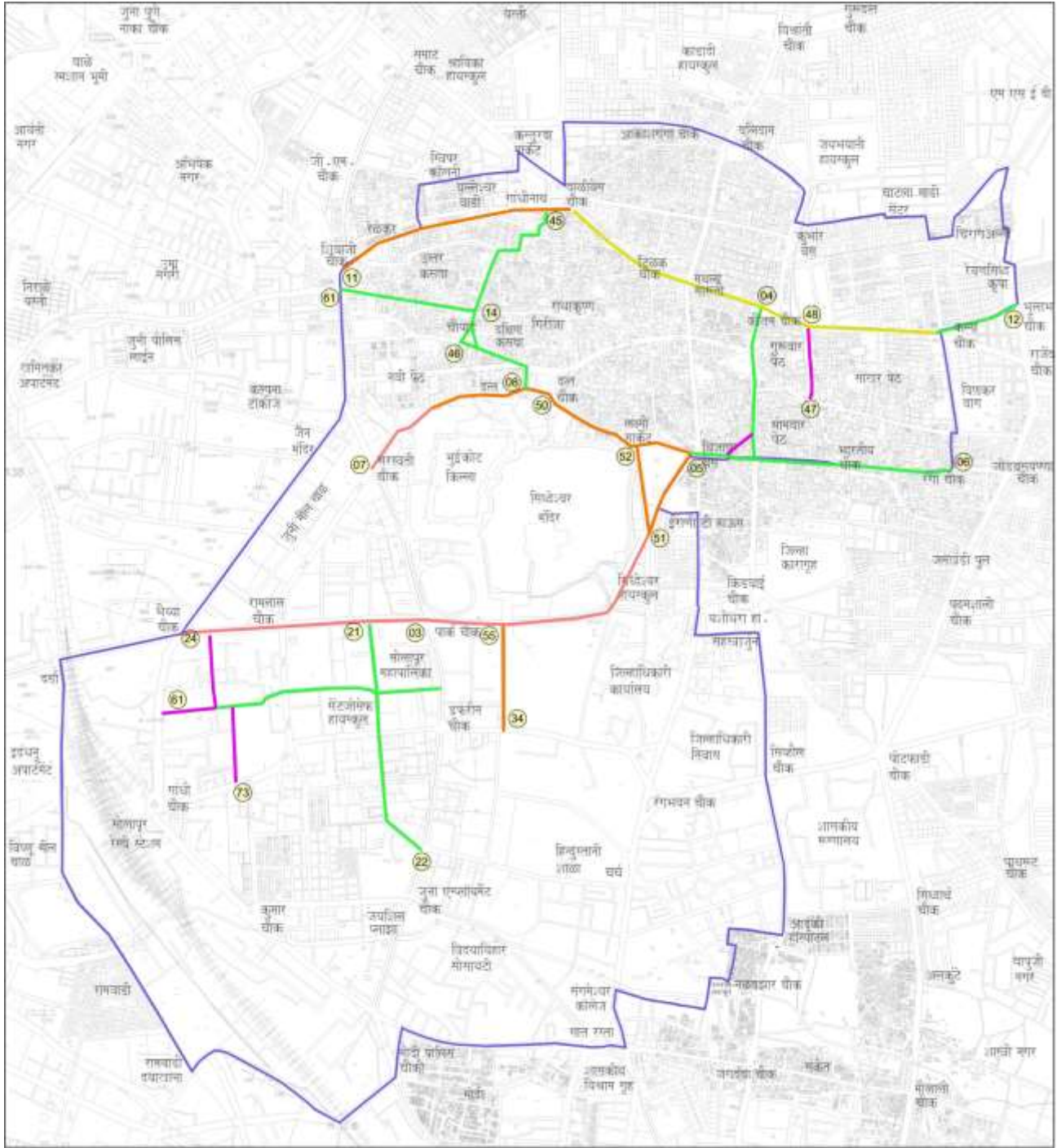
One of the major projects to be implemented in Solapur under the Smart Cities Missions is the development of Priority Roads. The current project is to be implemented by 'Appointment of Contractor for Procurement, Construction & Maintenance of Priority Roads in Solapur City, under Solapur Smart City Project,' is identified to cater to public infrastructure.

### **2.2. Introduction to the Project**

**2.2.1.** The Client is proposing Appointment of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with an approximate total length of 10.8 km road/ street/ footpath/junction/related utilities on Project Sites at Solapur City under Smart Cities Mission on several Project Sites in Area Based Development in Solapur City. The details of each Project Sites and proposed development are provided in the Project Information Memorandum (8.5 & 2 of this RFP).



The Nomenclature of the roads are as follows



Grade	Sr. No.	Road	Length in Kilometres	ROW in meters
Grade 1	03-04	Bhaiyya Chowk to Dr.Babasaheb Ambedkar chowk(Park chowk) to Siddheshwar temple to Panchakatta to Vijapur vess to Bakale press to Kontam chowk	2.206	>17.5
Grade 1	05-06	Vijapur vess to Baraaimam chowk to Bhartiya chowk to Ranga chowk	0.592	>17.5
Grade 1	07-08	Saraswati chowk to lucky chowk to Datta chowk	0.61	>17.5
Grade 1	11-12	Shivaji chowk to Balives to tilak chowk to Madala Maruthi chowk to Kontam chowk to Kanna chowk to Bulabhai chowk	2.488	>17.5
Grade 1	11-14	Shivaji chowk, Dilkhush hotel(Udpi hotel) to Choupad Balaji temple	0.523	10 to 13
Grade 1	45-46	Balives Mallikarjun mandir to Punjab tallim to Balaji madir to Chuppad Vitthal mandir parisar	0.79	10 to 13
Grade 1	50-51	Dutta chowk to Lakshmi market to Panchakatta to Zilla Parished chowk	0.532	>17.5
Grade 1	52-05	Lakshmi market to Vijapur vess	0.212	>17.5
Grade 1	47-48	Sayukya chowk to Mangalwar bazar	0.222	8 to 10
Grade 1	24-73	Bhaiyya chowk MSRDC road to railway hospital to Bakshi building to Good luck Store	0.589	8 to 10
Grade 1	55-34	Dr. Nirmalkumar Phadkule sabhagruha to Duffrin chowk	0.504	10 to 13
Grade 1	61-56	L.I.C corner to Saint Joseph high school to Prince hotel to National highway (railway ground)	0.845	10 to 13
Grade 1	21-22	Shubhray art gallery to Naval petrol pump to Konhapure chaal to Patvardhan chowk (Behind SMC building)	0.733	13 to 16
<b>Total</b>			<b>~10.8</b>	

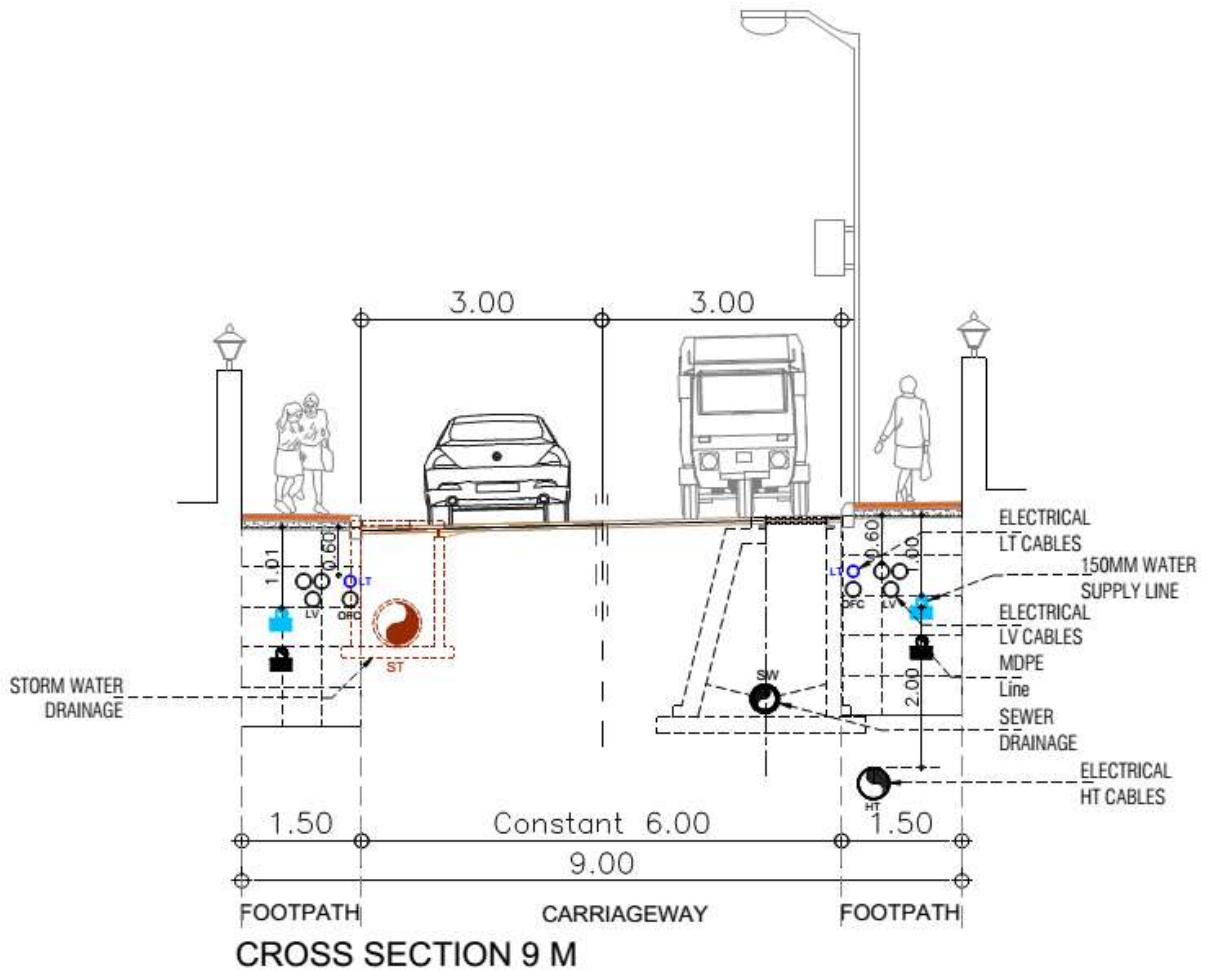
For smooth execution of the project, the above stretches are further bifurcated into following stretches –

Sr No	Name of Road/Stretch	Type of Proposed Pavement	Length in Kms.
1	Railway Hospital to Good luck store junction North Side	Flexible	0.228
2	Railway Hospital to Good luck store junction South Side	Flexible	0.227

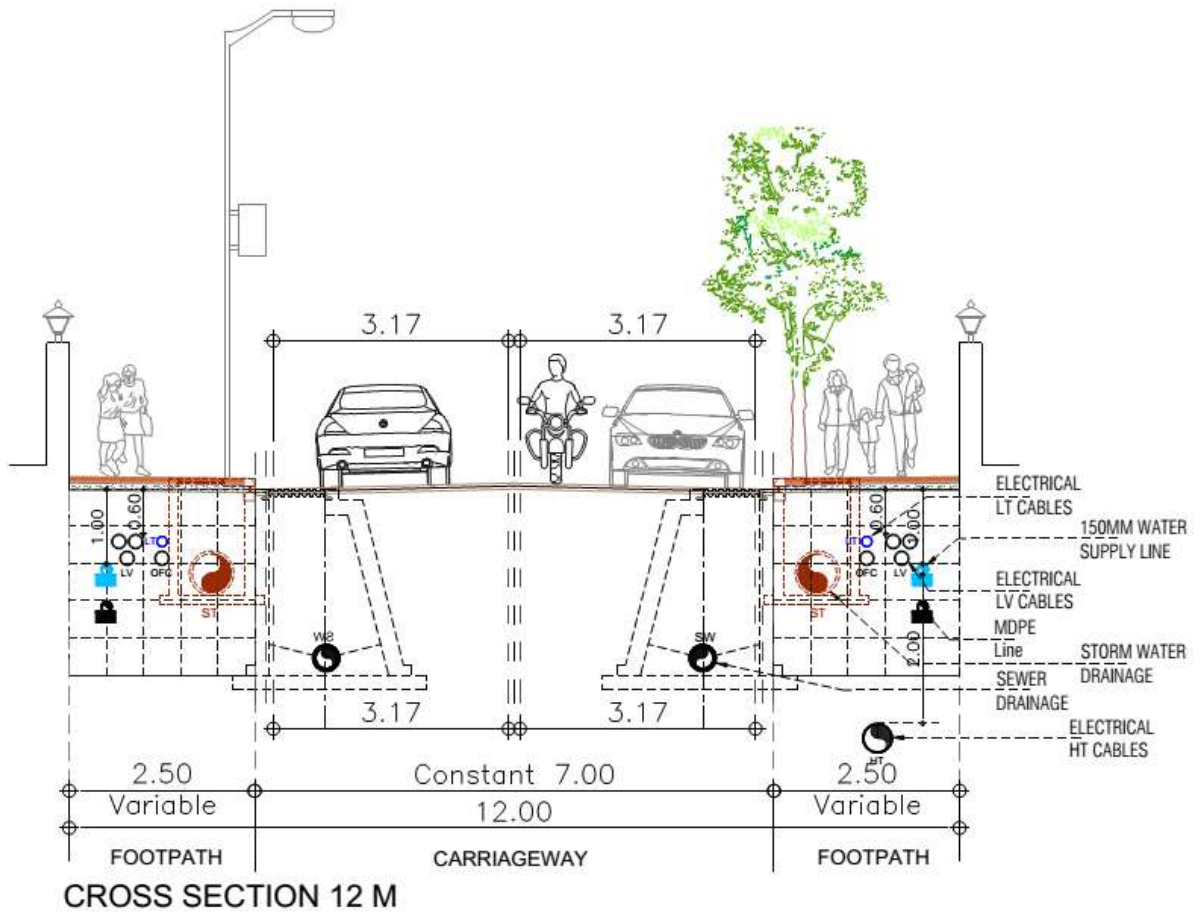
Appointment of Contractor for Procurement, Construction & Maintenance of Priority Roads at Solapur City,  
under Solapur Smart Cities Mission

<b>Sr No</b>	<b>Name of Road/Stretch</b>	<b>Type of Proposed Pavement</b>	<b>Length in Kms.</b>
3	LIC Corner to National Highway	Flexible	0.833
4	Shubhra Art Gallery to Patwardhan Chowk - 1	Flexible	0.214
5	Shubhray Art Gallery to Patwardhan Chowk - 2	Flexible	0.121
6	Shubhray Art Gallery to Patwardhan Chowk - 3	Flexible	0.141
7	Shubhray Art Gallery to Patwardhan Chowk - 4	Flexible	0.257
8	Balives Chowk to Bhulabhai Chowk	Rigid	1.466
9	Balives Chowk to West Segment	Rigid	0.105
10	Balives Mallikarjun Temple to Choupad Vithhal Mandir	Flexible	0.180
11	Baraimam chowk to Kountam chowk	Flexible	0.437
12	Sanyukt chowk to Mangalwar Bazaar parisar	Flexible	0.215
13	Balives Mallikarjun Temple to Choupad Vithhal Mandir Parisar	Flexible	0.355
14	Ch. Shivaji Chowk to Choupad Vithal Temple	Flexible	0.437
15	Balives Mallikarjun Temple to Choupad Vithhal Mandir Parisar	Flexible	0.102
16	Choupad vithal mandir parisar East Side	Flexible	0.047
17	Choupad Vithal Mandir to Datta Chowk	Flexible	0.303
18	Baraimam Chowk TO Ranga Chowk	Flexible	0.623
19	Laxmi Market to Vijapur Ves	Rigid	0.338
20	Baraimam Chowk North Side	Flexible	0.118
21	Panch Katta to Vijapur Ves	Rigid	0.972
22	Saraswati Chowk to Datta Chowk to Zilla Parishad Chowk to Park Chowk to Bhayya Chowk	Rigid	2.790
23	Dr. Nirmal Kumar Phalkule Sabhagrah to Mangalvedhekar Institute	Rigid	0.309
<b>Total Length in Kms. =</b>			<b>10.818</b>

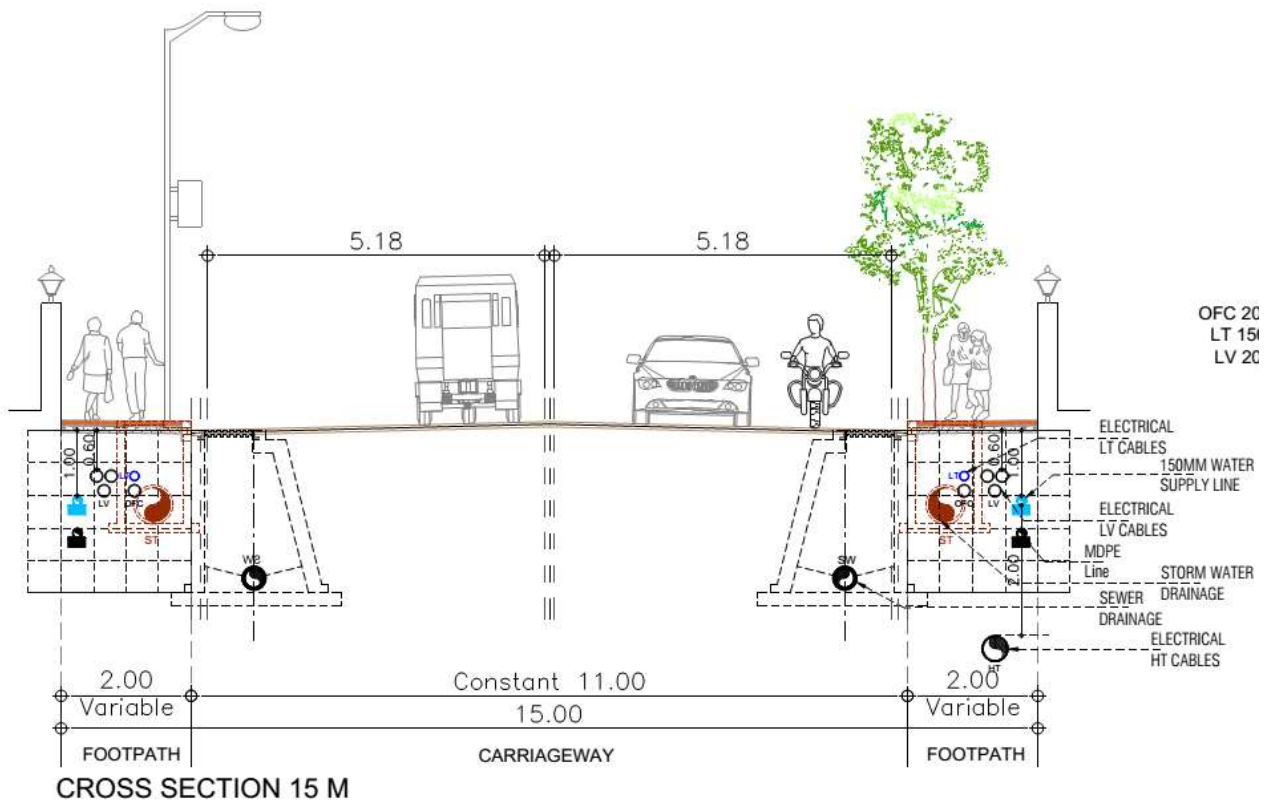
Typical Cross sections are as follows  
a) 9m ROW



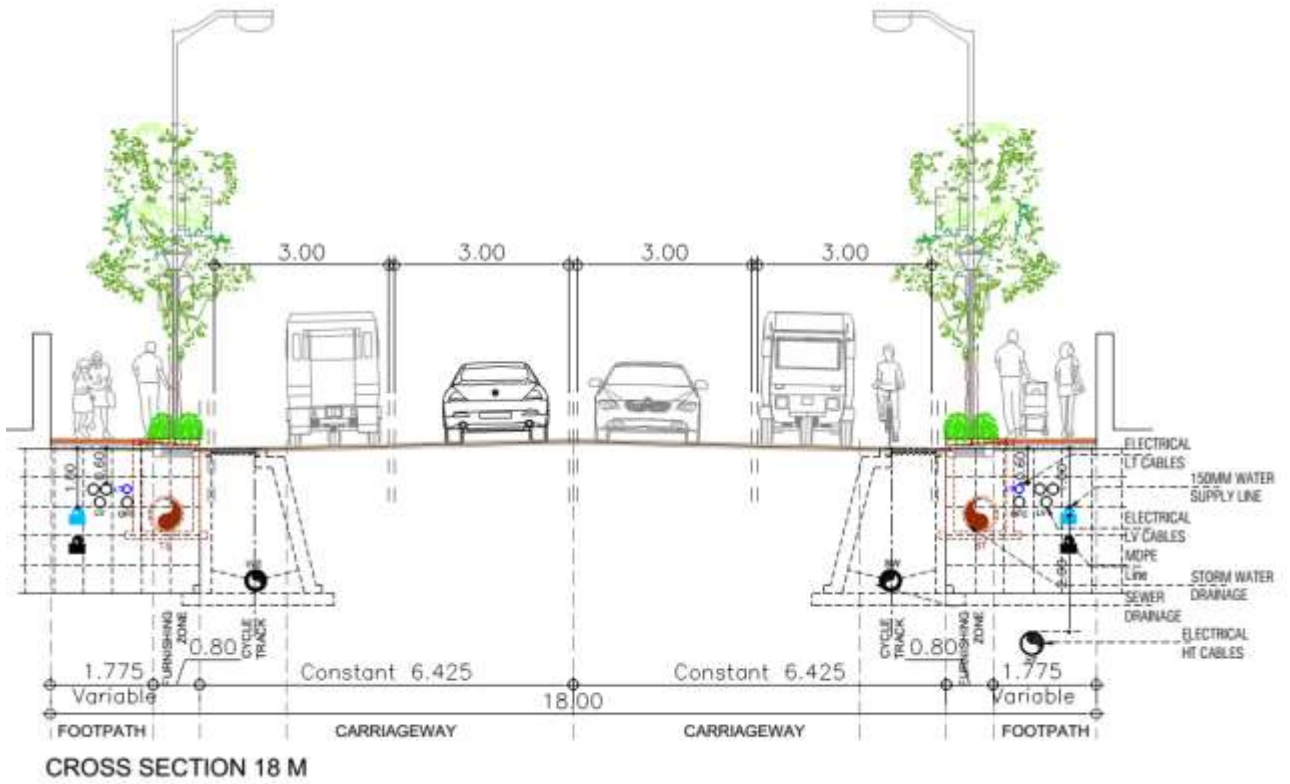
b) 12m ROW



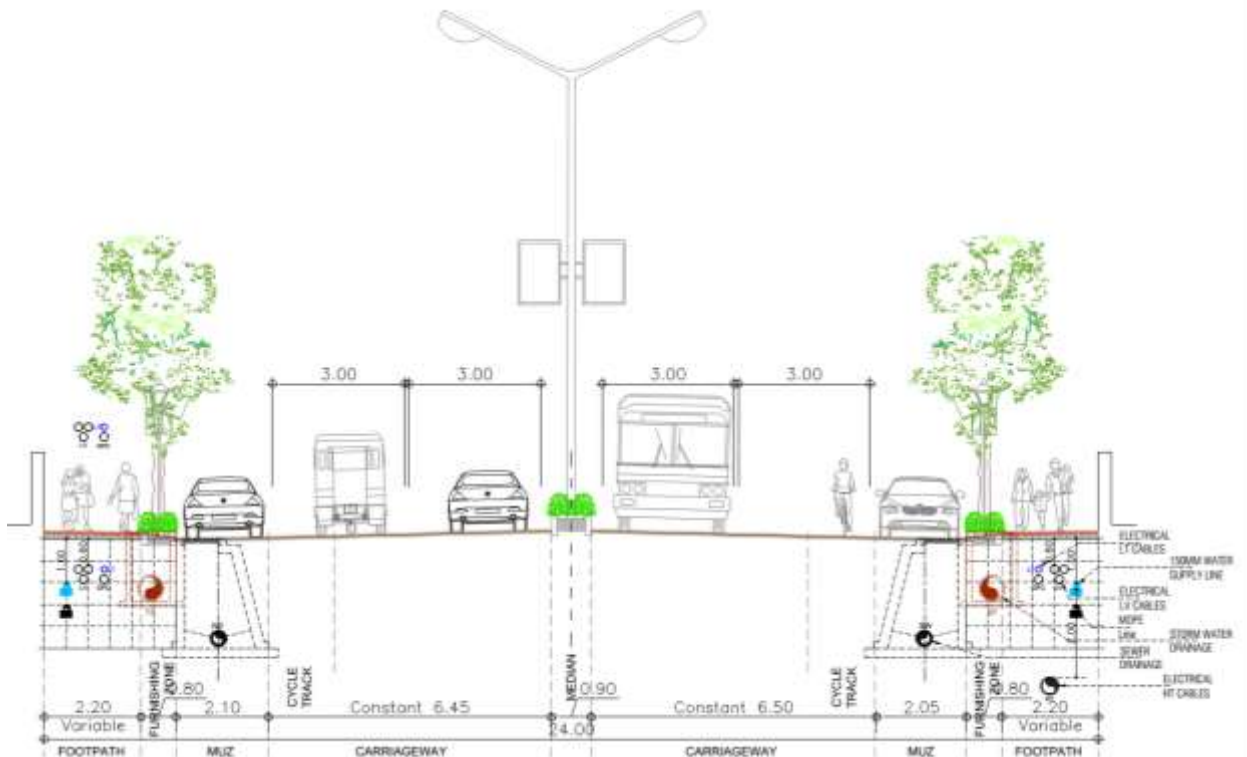
c) 15m ROW



d) 18m ROW



e) 24m ROW



- 2.2.2.** The Client is now inviting Bids for Appointment of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with an approximate total length of 10.8 km road/ street/ footpath/junction/related utilities on Project Sites at Solapur City under Smart Cities Mission. All prospective bidders shall bear in mind that the entire Project shall be implemented and undertaken separately in respect of each Project Site. Pursuant to execution of the Agreement, the Client shall issue to the “**Contractor**” (i.e. the Selected Bidder who has successfully executed the contract agreement with SCDCL, such successful execution of agreement resulting from complete and absolute compliance of the terms and conditions of the RFP required to be completed till that stage), one or more commencement orders (“**Commencement Order(s)**”) which will set out each Project Site to be constructed, including the timeline/schedule to be adhered to by the Contractor for each such Project Site. The Contractor shall commence procurement and construction activities of each Project Site in accordance with the terms and conditions of each Commencement Order for respective Project Site. Though the Project shall be undertaken in multiple sections, all Commencement Orders shall form an integral part and parcel of the Agreement and be issued by the Client within a period of [12] months from the execution date of the Agreement.
- 2.2.3.** The Client shall receive Bids pursuant to this RFP in accordance with the terms and conditions set forth in this RFP and other documents provided with/to be provided by the Client pursuant to this RFP and the Master Procurement, Construction & Maintenance Agreement as modified, altered, amended and clarified from time to time by the Client (collectively the “**Bidding Documents**”). All the Bids shall be prepared and submitted in accordance with such prescribed terms and conditions on or before the last date of Bid Submission specified in this RFP.
- 2.2.4. Defect Liability Period (DLP) -** The Selected Bidder will be responsible for all activities including procurement, construction and maintenance, as regards the Project, in accordance with the provisions of the Master Procurement, Construction & Maintenance Agreement. The Agreement read with respective Work Order shall set forth the detailed terms and conditions for the procurement, construction and maintenance of each Project Site. The Selected Bidder shall also be responsible for the maintenance of the Project during the period ending five (5) years from the Construction Completion Date for each Project Site undertaken by him pursuant to the Work Order and in the manner set out in the Agreement (“**Defect Liability Period (DLP)**”). At the end of the DLP, all the Project Facilities & Project Sites, with the entire documentation related thereto, including all Project Facilities developed and assets provided by the Client shall revert to the Client, free of cost and free from all encumbrances. During DLP period, if any defects observed to authority the same shall be conveyed to contractor which the contractor has to rectify within 8 days, fails so the authority will get it rectified at their own and the total expenditure will be deducted from contractor’s Security Deposit.

- 2.2.5.** The statements and explanations contained in this RFP are intended to provide a proper understanding to the Bidders about the subject matter of this RFP and should not be construed or interpreted as limiting in any way or in any manner the scope of services and obligations of the Contractor set forth in the Agreement or the Client's rights to amend, alter, change, supplement or clarify the scope of work, the Agreement to be awarded pursuant to this RFP or the terms thereof or herein contained.
- 2.2.6.** Consequently, any omissions, conflicts or contradictions in the Bidding Documents including this RFP are to be noted, interpreted and applied appropriately to give effect to this intent, and no claims on that account shall be entertained by the Client. The Client shall receive Bids pursuant to this RFP in accordance with the terms and conditions set forth herein and other documents as provided by the Client pursuant to this RFP and Bidding Documents.
- 2.2.7.** Considering the diversity in the project all rights shall vest in the CEO, SCDCL to grant relaxation in technical eligibility and other tender conditions, as per actual requirements.



## **SECTION 3. PROJECT OBJECTIVE AND SCOPE**

### **3.1. Vision**

**3.1.1.** A city's well-being is dependent on three core pillars:

**3.1.1.1.** Liveability – related to citizen's access to basic, core and enabling services required for a dignified life,

**3.1.1.2.** Competitiveness – set of institutions, policies and factors that determine the level of productivity & economic well-being of a city and,

**3.1.1.3.** Sustainability – economic growth with minimum drain on the environment

**3.1.2.** As per the Solapur Smart City Proposal there are two fundamental ways of assessing Solapur city's priorities - assessing the most pressing areas for citizens and comparing gap between existing level of service delivery versus accepted levels. Putting both these lenses together clearly highlights that Solapur needs to make a big push on transport and drainage.

### **3.2. Site Map, Project Details & Project Site Details**

**3.2.1.** Site maps and plans for each Project Site are enclosed herewith . The necessary Right of Way (ROW) shall be granted to the Contractor pursuant to the Agreement, prior to the proposed commencement date for construction of the Project as detailed in respective Commencement Order.

### **3.3. Scope of Work**

**3.3.1.** The scope of work has been more particularly described in the Agreement.

**3.3.2.** The entire Project shall be implemented and undertaken separately in respect of each Project Site and the Client shall issue separate Commencement Orders for each Project Site, indicating the scope of work for the project site, completion period, start and completion dates, project specific data & instructions etc.

### **3.4. Construction and Maintenance Periods**

**3.4.1.** The Contractor shall be allowed a period of (6-18 Months) for construction of each Project Site as set out in respective Commencement Order and shall be required to maintain each Project Site till end for 5 years thereof from the date of its completion for each Project Site undertaken by him pursuant to the Work Order and in the manner set out in the Agreement ("**Defect Liability Period (DLP)**"). The allotted time for completion of the Project may however be extended as per the provisions of the Agreement. All Commencement Orders for all Project Sites under the Project shall be issued within a period of [12] months from the date of execution of the Agreement.

### **3.5. Maintenance Requirement**

**3.5.1.** The Contractor shall be required to carry out such maintenance activities for smooth and uninterrupted operation of the roads and facilities at each Site provided and constructed by contractor, which obligations are more particularly described in the Agreement and respective Commencement Order.

**3.6.** Technical Specifications

**3.6.1.** Technical Specification for the Project are enclosed herewith in Appendix 13

**3.7.** Adherence to Laws, Bye Laws, Rules & Regulations

The Selected Bidder is required to follow all laws, rules & regulations of the land including all local body bye laws, for the purpose of implementation of the Project.

For the purpose of this clause the Selected Bidder is mandated to comply with inter alia the following laws, rules & regulations which are listed hereunder but are not limited or circumscribed by the same:

- i. Persons With Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995;
- ii. Minimum Wages Act, 1948;
- iii. Apprentices Act, 1961;
- iv. Contract labour (Regulations and Abolition) Rules, 1971;
- v. Environmental Protection Act, 1986;
- vi. Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014;
- vii. Workmen's Compensation Act, 1923;
- viii. Central Motor Vehicles Rules, 1989;
- ix. Solapur Urban Street Design Guidelines;
- x. Action Plan for Implementation of Action Points Identified for Ministry of Urban Development for the Empowerment of Persons with Disabilities;
- xi. Central Public Works Department Guidelines for Sustainable Habitat, 2014;
- xii. Central Public Works Department Works Manual, 2014;
- xiii. Central Public Works Department Guidelines and Space Standards for Barrier Free Built Environment for Disabled and Elderly Persons;
- xiv. Central Public Works Department Handbook on Barrier Free and Accessibility, 2014;
- xv. Central Public Works Department Publication on Integrated Green Design for Urban & Rural Buildings in Hot-Dry Climate Zone, 2014;
- xvi. Central Public Works Department Handbook of Landscape, 2013; and
- xvii. Smart City Mission Statement & Guidelines, 2015.

**1. SCOPE OF PROJECT**

**1.1 Scope of the Project**

Under this Agreement, the scope of the Project (the "Scope of the Project") shall mean and include:

- (a) Investigation, survey, and construction work for Improvement consisting of Development/Repairs/Up gradation/ Augmentation of selected Roads segments

(approximate total 10.8Km length) of various road widths in ABD Area including Foot path & Cycle track works, Utility Ducts, Road Markings, Traffic signage, underground storm water drainage, shifting of electrical poles and overhead power supply lines, underground electrical cable laying with installation and commissioning of allied electrical infrastructure and other Miscellaneous works.. Under this tender Scope of work of contractor shall also include Preparation of shop drawings, Procurement and Construction and Maintenance of Tendered works for Period of Five years with:

(b) Maintenance of the Project in accordance with the provisions of this Agreement and in conformity with the requirements.

(c) Performance and fulfilment of all other obligations of the Contractor in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Contractor under this Agreement.

(d) If due to any unavoidable circumstances, there is any need to shift the location of project partly or fully, the contractor shall carry out the work partly or fully at another alternative location without any extra claim. The expenditure towards preliminary activities if carried out by the contractor at the original location, the same shall be reimbursed by SCDCL (the lesser of actual expenditure or payment shown in Schedule of Payment-pre- construction activities-as per stage of work carried out by the contractor).

(e) Scope of work contained in the paragraphs mentioned below is only indicative and not exhaustive. In addition, the contractor shall be responsible for executing all items required for completing the work as per direction of Engineer-in-charge. The price quoted shall be deemed to include all the items and covers all details as may be required to meet the purpose and intents of the contract.

(f) The Designs, drawings and estimates included in this RFP are for reference purposes only. The selected bidder/contractor shall be required to carry out all sorts of investigations like site surveys, topographical surveys, hydrological surveys, geo-technical investigations, scanning roads for assessment and identifications of services and utilities laid down previously (like OFC Cables, Telecom Cables, Electrical Cables, water supply lines, gas pipe lines etc.). The selected bidder/contractor shall be responsible to take out aforesaid services, restore them and shift them in the corresponding infrastructure created for respective services. The scope of work includes dismantling old work and create new facilities after design and approval from the Engineer in charge.

(g) The scope of work shall not be limited to that mentioned in the above paras, but shall also include addressing any exigency generated during execution of tendered work and no extra cost shall be paid for the same.

(h) No extra payment shall be paid for time overrun.

## 1.2 SCOPE of Work

### 1.2.1 Scope of Work

- 1 Contractors are requested to visit the site prior to well before last date of submission of bid and check all the necessary attributes/matters related

to/affecting the completion of this project.

- 2 All the activities required to be carried out for successful and timely completion of this project shall be carried out by the successful bidder/contractor

1.2.2 (A) DETAIL SCOPE OF WORK CIVIL COMPONENTS:

The works under this RFP comprises of the construction of proposed improvement of roads, Junctions, storm water drainage works, construction of new carriageway, construction of utility ducts, culverts, foot path, cycle track, Traffic Signages, Road Markings, water supply lines, and Miscellaneous works and Maintenance of works in this RFP for Period of Five years

The successful bidder shall have to prepare and submit 'As Built Drawings' depicting the exact

construction carried out on site, in soft (CAD Format) and hard copy

Statutory and other charges for getting various required approvals shall be in scope of Successful bidder/Contractor

The scope of work also includes:

1.2.3 Construction and completion of the following:

- i.2.3.1 Site clearance, demolition works, earthworks, temporary works, traffic diversion, barricading the construction site, utility shifting and all ancillary works deemed necessary for the carrying out of temporary & permanent construction works.
- i.2.3.2 Widening/ re-cambering/ raising/ milling down & overlaying of existing carriageways, flexible/ rigid pavement at grade road intersections & accesses to adjoining developments.
- i.2.3.3 Tree cutting (if any) as indicated in the drawings.
- i.2.3.4 Construction of Utility ducts, cross drains as per approved drawing.
- i.2.3.5 Installing RPM, making road markings along the road edge, road centre line & as per IRC guidelines, bus stop marking, cycle track marking, construction of medians & speed breakers, & junction improvements as per the drawings & in accordance with the Client's requirements and to the satisfaction of the Engineer in charge.
- i.2.3.6 Construction of footpaths, kerbs, railings, vehicular impact guardrails and other road related facilities as per the guidelines of IRC in accordance with the Client's requirements and to the satisfaction of the Engineer in charge.
- i.2.3.7 Supply and installation of new traffic signage, directional signage, street name signs & re-fitting of such existing signs & other road signs that are intended to be retained as per instructions, inclusive of support & foundation as per Client's Requirement.
- i.2.3.8 Supply and installation of new Electric poles and light fittings as per

approved drawings;

i.2.3.9 All other works and services ancillary or related to the full completion of the Works in accordance with the Client's requirements

- i.2.4 The Contractor shall ascertain, determine and verify the locations of all utility services by scanning the roads in the vicinity of the Works, and co-ordinate with utility agencies for the diversion of affected services and the laying of new services. The Contractor shall support and protect services that need not be diverted or pending diversion and remove all abandoned services. Contractor shall be responsible for relocation, reconstruction, reconfiguration of driveways, site accesses, temporary and permanent drains, pipe conduits and necessary connections for public lighting and traffic lighting, earth works, turfing, environmental assessments, necessary safety measures and protection works, sewer lines etc.
- i.2.5 The Contractor 's responsibility for the design and build works includes the submissions to relevant government authorities / technical departments for obtaining all necessary clearances/approvals.
- i.2.6 The Contractor shall co-ordinate and interface his works with that of all other contractors, subcontractors, utility services, statutory authorities, etc. and achieve the completion of the Works to the satisfaction of the Engineer.
- i.2.7 The Contractor shall verify the proposed road reservations, cadastral boundary and contract boundary and all dimensions on Site prior to submission of Tender. The Contractor shall raise queries for obtaining any discrepancy between the Drawings and actual condition on Site.
- i.2.8 The Contractor shall remedy all works including road surfaces, drains, concrete slabs, gratings, kerbs, pavements, turfing, railing, fence, boundary wall, etc. affected or damaged during the course of construction, to the satisfaction of the Engineer. The costs of making good all these defects shall be borne solely by the Contractor and shall be deemed to be included in his quoted bid amount.
- i.2.9 All works specified shall include the provision of all labour, tools, equipment, material, traffic control, transport and everything else necessary for the satisfactory completion of the Work by the Contractor to the satisfaction of the Engineer.
- i.2.10 Description of the Works involved in this Contract is given in the Specifications for the guidance of the Contractor. The Contractor shall be solely and fully responsible for investigating and Ensuring the actual extent and nature of the works comprised in the contract prior to submission of his tender.

**Guidelines with regard to use of materials in the work:**

- a) The contractor shall produce samples of the materials for approval of the Engineer in charge (EIC). The materials of the makes, out of the above as approved by the EIC shall be used on the work.

- b) In respect of materials for which makes are not specified, the make/brand will be decided by the EIC.
- c) Before bulk purchase of quantities of materials, it shall be the responsibility of the Contractor to get the samples of materials approved from consultant and EIC.
- d) All cost towards the testing shall be borne by the contractor.
- e) For all the material of approved brands necessary testing as per IS standards shall be done by the agency and no extra payment shall be paid for that.

#### 1.2.4 Water Supply Works

- a) Assessment of Distribution System on DMA Basis
- b) Distribution Network Improvement on DMA basis
- c) Establishment of DMA's
- d) DMA Creations
- e) Consumer Survey
- f) Leak Detection  
Electronic sounding rods and Leak Noise Correlator shall be used in conjunction to locate leaks. The Contractor may suggest alternative ways of leak detection if he so desires but the same shall be approved prior to leak detection.
- g) Providing, laying and hydraulic testing of DI pipes of various diameters in different DMAs as per drawings, specifications and as per BOQ items. (All incidental works related to pipeline works, which are not specified in BOQ item description however required for completion of works, are considered incidental to the respective BOQ item and the cost of same are deemed to be included in the respective items in BOQ.
- h) Providing , supplying , lowering , fixing and satisfactory testing sluice valves , air valves, pressure reducing valves, pressure loggers, quality analyzers, flow meters , road boxes , household meters etc. as per specifications , drawings and as per BOQ items.
- i) Interconnections of pipe network
- j) Providing household connections,
- k) Diversion of flow by installing end cap/adaptor at pipe end.
- l) Repairing damaged water and drainage connections
- m) Repairing damaged drainage connections
- n) Providing and fixing specials as per specifications, drawings and BOQ items.
- o) Pipeline Alignment  
The knowledge of exact alignment of the pipelines is important. As such it is necessary to have spatial data of the pipelines. It is proposed that the contractor should prepare "As Built" drawings of the pipelines laid newly. The contractor should also prepare the alignment drawings of the existing DI-K9 pipelines.

#### 1.2.5 Drainage works

- a) Supply, laying, installation and testing drainage pipes of various diameters as per specifications, drawings and BOQ items. (All incidental works related to Drainage works which are not specified in BOQ item description

however required for completion of works are considered incidental to the respective BOQ item and the cost of same are deemed to be included in the respective items in BOQ.

- b) Providing, laying, testing drainage households connections in different DMAs.
- c) Providing and constructing B.B masonry circular manholes for different depths with concentric cone as per specifications, drawings and BOQ item.
- d) Providing and fixing intercepting sewer trap including concrete bedding etc. complete.
- e) Providing and fixing in position vertical drops of various levels etc. complete
- f) Providing and fixing 'Y' junction and labour etc. complete
- g) Making trenches for laying water supply, drainage pipelines, chambers and manholes etc., refilling the trenches, disposing off the surplus excavated material and backfilling around the chambers and manholes. These works shall be carried out as per specifications provided in Tender.

1.2.6 Providing SCADA system for entire Water Supply system

Contractor shall provide the SCADA system as per specifications covering all incidental items which are not specified in BOQ items required for functioning of SCADA system

1.2.7 Providing Operation & Maintenance Services (O &M).

Contractor shall provide the Operation and maintenance services as specified in BOQ. Scope of work includes but not limited to operation and maintenance of Water supply system for a period of 6 (six) years

1.2.8 Providing Training to Corporation staff

## INSTRUCTION TO BIDDERS

### 3.8. Eligibility & qualification requirements of the Bidder

#### 3.8.1. Eligibility. For determining the eligibility of the Bidder, the following shall apply:

- (i) The Bidder may only submit one bid and may be a single entity or an incorporated joint venture company (**IJV**) / proposed joint venture company (**JV**) strictly in accordance with the following:
  - a. Joint ventures shall be with maximum two members and the lead partner (JV share more than 50%) shall be an entity based and duly registered in India. The minority member of the JV may be either an Indian entity or a foreign entity. In case the minority member of the JV is a foreign entity then it shall provide substantiations of its eligibility in the form as desired by the Engineer in charge without any demur whatsoever, including official translations, in English, of documents, that are in any other language. The percentage share of the any JV partner in the JV shall not be more than his limit of the eligibility in terms of the financial criteria to quote for works divided by the estimated cost of the work put to tender (i.e. when such a percentage is applied to the cost of the work, his share of cost should not exceed his own financial eligibility). In case of JV, all the JV partners shall be registered in Class IA and above.
  - b. The lead JV partner shall alone satisfy all the technical eligibility criteria.
  - c. Both the JV partners shall satisfy all the financial eligibility criteria to the extent of their percentage share in the JV.
  - d. Successful bidder shall be required to deposit a Security deposit for an amount equivalent to 10% of the Contract price. Out of which 2% amount in the form of initial Security Deposit of contract price in the form of D.D/B.G. if the Letter of Intent is issued to it. 1.00% E.M.D. of the contract price will be treated as S.D. In case the Successful bidder is a Joint Venture with Foreign based Construction entity (that is an entity which is based/registered in any country other than India), the Performance Security deposit shall be 10% of the contract price in the form of DD/Bank Guarantee.
  - e. 7.5% Security deposit will be deducted from each R.A Bill . i.e. total 10% S.D. shall be retained up to end of Defects Liability Period.
  - f. The EMD/Performance Security/any other deposits shall be in the form of DD/Bank Guarantee only. These shall be drawn on/payable at on a nationalized Indian Bank on any branch in Solapur only.
  - g. The main JV partner shall need to approach SCDCL, within two weeks of the first date of the uploading/publishing of the Notice Inviting Bid, and obtain written permission from SCDCL for its proposed JV/IJV. The lead JV partner shall then approach SCDCL with a notarized MOU duly bearing seals and signatures of all JV stakeholders and a forwarding letter stating the explicit need for the JV and the respective cost bearing & profit sharing ratios, in line with (A) above. Bids by JV without such prior written permission shall be summarily rejected. In case SCDCL decides to issue the Letter of Intent to such a JV, which has been pre-approved in principle by SCDCL, subject to provisions above, such proposed JV shall immediately commence the process for registration of the JV with the Registrar of Companies and, within 30 days of intimation of the intent to award, submit the



Certificate of Incorporation as a legally incorporated Joint Venture to SCDCL (under the Companies Act of 2103).

- h.** In case of Joint Venture company, the companies entering into a JV should submit all the necessary documents online through the lead partner. No individual documents shall be uploaded by companies in JV.
- (ii)** Experience and resources of the applicant (or applicants as partners in an IJV/ proposed IJV) as sub-contractor(s) or as members of any other prior JV/JV/partnership, shall not be taken into account in determining the bidder's compliance with the qualifying criteria. Experience as a nominated sub-contractor for any government agency/PSU shall only be considered.
- (iii)** A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in this bidding process if any of, including but not limited to, the following apply:
- a. they have controlling shareholders in common; or
  - b. they receive or have received any direct or indirect subsidy from any of them; or
  - c. they have the same legal representative for purposes of this bid; or
  - d. they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to material information about or improperly influence the bid of another Bidder, or influence the decisions of the Client regarding this bidding process; or
  - e. a Bidder participates in more than one bid in this bidding process, either individually or as a partner in a joint venture, except for alternative offers permitted under Joint Venture. This will result in the disqualification of all Bids in which it is involved. This does not limit the participation of a Bidder as a subcontractor in another Bid or of a firm as a subcontractor in more than one Bid; or
  - f. a Bidder or any affiliated entity, participated as a consultant in the preparation of the design or technical specifications of the plant and services that are the subject of the Bid; or
  - g. a Bidder was affiliated with a firm or entity that has been hired (or is proposed to be hired) by the Client.
- (iv)** The Bidder shall be fully responsible for keeping indemnified the Client from all legal implications and shall bear all legal expenses including any losses incurred by the Client, its officers, employees, agents, trustees and consultants including and arising out of or in relation to or due to any breach of the representations or warranties, or any of the covenants or obligations of the Bidder under this RFP or any of the terms and conditions of this RFP by the Bidder or any contractor/licensee or any employee or agent of the Bidder.

### 3.8.2. Qualification

An indicative list of qualification requirements has been outlined in Appendix 4A to act as general guidance. Such qualification requirement should be read in conjunction and in addition to the requirements specified in this Section.

(i) **Qualification Capacity:**

- (a) Only the Bids qualifying the Qualification Bid will be considered for commercial evaluation and submitted in the format meeting all requirements of Appendix 6, 7, 8, 9, 10, 11
- (b) SCDCL may require written clarifications from the Bidders to clarify ambiguities and uncertainties arising out of the evaluation of the Bid documents (to be stated precisely as it should be in SCDCL's interest).
- (c) the Bidder shall submit the relevant project details along with work order and scope of work in hand. For clause 4.1.2.(e) i. Project must be 100% complete and/or Facility open to public/intended users. For clause 4.1.2.(e) ii and iii at least one project must be 100% complete and/or Facility open to public/intended users; balance Projects with completion of 50 % ( certified by client, subject to submission of documents evidencing the progress of each project) and above shall be considered if critical component of project is complete and/or Facility open to public/intended users.
- (d) The Bidder should furnish the details of relevant project details of Similar Projects and Services for the last 7(seven) financial years immediately preceding the Bid Submission Date.
- i. The Maximum Annual Turnover of the Bidder during the immediate previous 3 completed financial years, enhanced by 10% year on year basis, to arrive at its current value in the running financial year, should not be less than 75% of the yearly estimated cost put to tender
- ii. The Bidder must have completed *one* Similar Projects and Services costing not less than the amount equal to 60% of the estimated cost specified in the BOQ, (please refer clause no 4.1.2.(d); or
- iii. The Bidder must have completed *two* Similar Projects and Services, each costing not less than the amount equal to 40% of the estimated cost specified in the BOQ,(please refer clause no 4.1.2.(d); or
- iv. The Bidder must have completed *three* Similar Projects and Services, each costing not less than amount equal to 30% of the estimated cost specified in the BOQ,(please refer clause no 4.1.2.(d).
- v. The bidder or Partner of IJV must have completed the following-

Distribution system- One work of minimum 300 mm diameter pipeline for length of 6 km related to providing, lowering, laying, jointing, testing and commissioning of

CI/ DI/ MS pipelines for Water Supply works during last 7 (Seven) years preceding the Bid Due Date.

Sewerage System- One work of minimum 200 mm diameter for length of at least 6 km related to providing, lowering, laying, jointing, testing and commissioning of DWC pipeline for sewerage network during last 7 (Seven) years preceding the Bid Due Date.

- vi. The bidder must have completed similar electrical works of at least 50% of the estimated electrical works in this tender in a single work order during the last five years preceding the Bid Due Date.
- vii. The bidder should have bid capacity more than the estimated cost put to tender as per bid capacity formula indicated as below:

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

where A = Maximum Annual Turnover of any one year during the last 3 years (updated to the current year by a factor of escalation of 10% per year)

B = Value of existing commitments and works (Ongoing) to be completed in the period stipulated for completion of work in present tender.

N = Number of years prescribed for completion of present tendered work, for which bids are invited.

All the above shall be submitted as supporting documents along with Appendix 9. Further, the Bidders shall attach a copy of the completion certificate/ necessary certificates/ work order/ purchase order/ contract signed by the respective clients/ authorities/ owner etc.

- (e) **Similar Projects and Services** shall mean and include procurement , construction & maintenance in relation to projects of road development/ street retrofitting with utility services carried out by the Bidder during the preceding 7 (Seven) years.
- (f) All financial data and statements or calculations shall be duly stamped and signed by the Chartered Accountants of the bidders and shall be submitted in originals. Certified True Copies of Letter of appointment of the CA shall be provided in the technical bid along with the financial eligibility documents.
- (g) The Bidder must provide the necessary information relating to the Qualification Capacity as per the format provided in Appendix 9 with respect to Similar Projects and Services. Further, the Bidders are mandated to furnish the required Project-specific information and evidence in support of its claims of Qualification Capacity as per the format provided in the aforementioned Appendices.
- (h) Furthermore, the Bidders must own machinery and IT systems as per the list provided along with Appendix 9 which can be deployed for the Project (List of Machinery).
- (i) Furthermore, the Bidders must have trained and experienced personnel on payrolls as per the list provided along with Appendix 9 which can be deployed for the Project (List of Personnel). In case of a JV, both members must satisfy this requirement,;

to clarify, without limiting the generality of the foregoing, no member may only act in the capacity of financier for the Project.

- (j) The evaluation shall be carried out on the basis of the criteria specified in the table below.
- (ii) Financial Capacity (*Such should not be confused with Financial Bid, as financial capacity shall form an integral part of the Qualification Bid, the necessary supporting documents prescribed in Appendix 2,3,4,4A,4B,4C,5 shall be submitted together with all the necessary documents required to be submitted along with the Qualification Bid*)
- (a) The Technical Bid must be accompanied by the Audited Annual Reports of the Bidder for the last 3 (three) financial years, preceding the year in which the Bid is submitted.

### 3.8.3. LIST OF TECHNICAL PERSONNEL FOR THE KEY POSITIONS

The Contractor will have to appoint the following key personnel during the execution and entire contract period, apart from other key personnel and support staff as necessary.

Sr. No.	Details	Required nos.
1	Project Manager with degree in Civil Engineering having minimum relevant post qualification experience of 15 years	One
2	Site Engineer with Degree/Diploma in Civil Engineering having minimum 5(for Degree holders) / 7 (for Diploma holders) years' experience	Three
3	Quality Control / Quality Assurance Engineer with Degree in Civil Engineering having minimum 5 years of relevant experience	One
4	Traffic Manager / Safety Officer having 5 years' experience in Road Safety and Management	Two
5	Sr. Electrical Engineer with degree in Electrical Engineering and 10 yrs working experience	One
6	Quantity Surveyor with degree in Civil Engineering having minimum relevant post qualification experience of 5 years	One
7	Infrastructure Engineer with degree in Civil Engineering having minimum relevant post qualification experience of 5 years	Three
8	Site Engineer with Degree/Diploma in Electrical Engineering having minimum 5(for Degree holders) / 7 (for Diploma holders) years' experience	Two

Penalty for Non-deployment of above staff are as follows:

<b>Sr No</b>	<b>Details</b>	<b>Penalty to be computed on Per Month basis</b>
1	Project Manager with degree in Civil Engineering having minimum relevant post qualification experience of 15 years	Rs. 100,000/- p.m.
2	Sr. Electrical Engineer with degree in Electrical Engineering and 10 yrs working experience	Rs. 85,000/- p.m.
3	Site Engineer with Degree/Diploma in Civil Engineering having minimum 5(for Degree holders) / 7 (for Diploma holders) years of experience	Rs. 75,000/- p.m.
4	Quality Control / Quality Assurance Engineer with Degree in Civil Engineering having minimum 5 years of relevant experience	Rs. 60,000/- p.m.
5	Traffic Manager / Safety Officer having 5 years' experience in Road Safety and Management	Rs. 50,000/- p.m.
6	Quantity Surveyor with degree in Civil Engineering having minimum relevant post qualification experience of 5 years	Rs. 50,000/- p.m.
7	Infrastructure Engineer with degree in Civil Engineering having minimum relevant post qualification experience of 5 years	Rs. 50,000/- p.m.

#### 3.8.4. LIST OF EQUIPMENT / MACHINES FOR CONSTRUCTION WORK

Bidders to furnish ownership details of minimum requirement in the format given below for the Work

<b>Sr. No.</b>	<b>Name of Equipment/ Machinery</b>	<b>Min Quantity Required</b>
1	RMC plant (Batch type) with electronic control having capacity minimum 30 cum/Hr	1
2	Hot Mix Plant (Batch type) having capacity minimum 120 TPH	1
3	Crusher 200 TPH	1
3	Fixed-form Paver with electronic sensor	1

Sr. No.	Name of Equipment/ Machinery	Min Quantity Required
4	Vibratory Roller	2
5	Static roller having minimum 8-10 Ton capacity	1
6	Motor Grader	2
7	Loader with Back Hoe	2
8	Tipper Truck	8
9	Pocklain	1
10	Soil Compactor	1
11	Transit Mixer	2
12	Hydra Crane	1
13	Surveying Equipment:	
	• Total Station	1
	• Auto Level	1

**Note:** In case of non-availability of any equipment with the bidder, the bidder shall furnish details of any rented equipment with proper notarized agreement with the renting agency/owner

The successful bidder within 15 days from date of issue of work order shall submit request to the Engineer in charge for inspection of RMC plant conforming to M.O.R.T.&H. specification (located within 30 Km. from the city limits) and machinery.

After Inspection, Engineer In charge may accept the request as it is or instructed for some changes if required in the plant and/or machinery which shall be carried out by the contractor at this own cost. Only after its approval by the Engineer - in - Charge, the contractor shall carry out work from the approved RMC plant and machinery.

### 3.9. Brief Description of Bidding Process

- 3.9.1. The Client has adopted a single stage two-envelope system process (referred to as the “**Bidding Process**”) for selection of the Bidder for award of the Project. Under this Bidding Process, the bid shall be opened in two parts. The “**First Part**” (the “**Qualification Bid**”) of the Bidding Process involves opening of the Envelope I in the presence of all the stakeholders (including the Bidders and project management team of engineers) who choose to remain present. In the Qualification Bid, the Bidders would be required to furnish all the information and documents necessary as specified in the RFP herein. This shall be followed by evaluation of eligibility & qualification (the “**Qualification**”) of interested or prospective Bidders as per the criteria prescribed in the RFP, who have made an application in accordance with the provisions of this RFP. At the end of the First Part, the Client expects to announce shortlisted qualified Bidders; the shortlisted qualified Bidders shall be eligible for participation in the “**Second Part**” of the Bidding Process (the “**Financial Bid**”).
- 3.9.2. Interested Bidders are being called upon to submit their Bid, including the Qualification and Financial Bid, simultaneously, in accordance with the terms and conditions specified in the RFP. The Bid shall be valid for a period of one hundred and twenty (120) days from the last (or extended, if applicable) Bid Submission Date specified in the RFP or corrigendum thereto, as applicable.
- 3.9.3. The Bidder is required to submit, along with its Bid, an ‘Earnest Money Deposit’ of INR 43,86,900 (0.5% of the estimate provided for in BOQ, Schedule B) (“**Earnest Money Deposit**”, “**EMD**” or “**Bid Security**”), refundable not later than ninety (90) days from the signing of the Agreement with the Selected Bidder, except in case of the Selected Bidder whose Bid Security shall be adjusted against the Security Deposit under the Agreement.
- 3.9.4. Bidders are advised to examine the Project in great detail and study the Project and RFP carefully as may be required before submitting their respective Bids in response to the RFP notice. Submission of a proposal in response to this notice shall be deemed to have been done after careful study and examination of this document with full understanding of its terms, conditions and implications. This RFP is non-transferable.
- 3.9.5. The Bids will be evaluated for the Project on the basis of percentage rate (**B1 type**), as calculated below/above the estimate provided for in the BOQ in Schedule B below, required by the Bidder for implementing the Project (“**Bid Percentage**”). The total time allowed for completion of construction of each Project Site under the Agreement read with respective Work Orders (the “**Construction Period**”) and the period during which the Selected Bidder shall be liable for maintenance and rectification of the any defect or deficiency during the Defect Liability Period shall be pre-determined and is specified in the draft Agreement forming part of the Bidding Documents.

In this RFP, the term “**Lowest Percentage Bidder**” shall mean the bidder which is quoting the lowest percentage (“**Bidder’s Estimate**”). It is clarified that a Bidder may quote a negative percentage and that a negative percentage is and shall be considered lower than a positive percentage quote. It is further clarified that the Bidder’s Estimate shall be inclusive of the cost of the Maintenance requirements under the Project and shall not be paid over and above the Bidder’s Estimate, hence, Bidders are advised to quote accordingly.

The “**Bidder’s Estimate**” shall be calculated as per the following formula:

Client’s estimate as provided in Schedule B+ (Bid Percentage) x Client’s estimate as provided in Schedule B = Bidder’s Estimate

E.g. If the estimate for the project total is INR 1,00,000/- (Indian Rupees One Lac Only), and bidder ‘1’ quotes “5%” while bidder ‘2’ quotes “- 5 %”, their respective quotes will be calculated (as per the above formula) as:

- Bidder ‘1’:  $1,00,000 + (5\%) \times 1,00,000 = 1,05,000$
- Bidder ‘2’:  $1,00,000 + (-5\%) \times 1,00,000 = 95,000$

Hence, bidder ‘2’s having bid a lower percentage than bidder ‘1’s bid, shall have the lower bid i.e. a bid of -5% is lower than a bid of 5%.

**3.9.6.** Generally, the Bidder quoting the Lowest Percentage i.e. the Lowest Percentage Bidder (B1) shall be the selected Bidder. In case such Lowest Percentage Bidder withdraws or is not selected for whatsoever reason, the Client shall annul the Bidding Process and invite fresh Bids. In case, if two Bidders have quoted the same Bid Percentage, the Project will be awarded to the Bidder considering the earliest date of incorporation/registration, as the case may be, of the Bidder.

**3.9.7.** Other details of the process to be followed under this Bidding Process and the terms thereof are spelt out in this RFP.

**3.9.8.** The statements and explanations contained in this RFP are intended to provide a proper understanding to the Bidders about the subject matter of this RFP and should not be construed or interpreted as limiting in any way or in any manner the scope of services and obligations of the Contractor set forth in the Agreement or the Client’s rights to amend, alter, change, supplement or clarify the scope of work, the Agreement to be awarded pursuant to this RFP or the terms thereof or herein contained.

**3.9.9.** Consequently, any omissions, conflicts or contradictions in the Bidding Documents including this RFP are to be noted, interpreted and applied appropriately to give effect to this intent, and no claims on that account shall be entertained by the Client.

### **3.10. Schedule of Bidding Process (Data Sheet)**

The Client shall endeavour to adhere to the following schedule:



Sr. No.	Event Description	Date
1.	Publication of Request for Proposal	24/08/2018 at 10.00 AM
2.	Pre-Bid Conference Date- can be avoided check with CE (Points can be mailed & answered)	04/09/2018 at 3:00 PM at SCDCL Office, Solapur
3.	Last Date to send in Requests for Clarifications	04/09/2018
4.	Last date of Purchase of Tender	17/09/2018 till 3.00PM
5.	Bid Submission Date	17/09/2018 by 3.00 PM
6.	Bid Validity Period	[120] days from Bid Submission Date
7.	Opening of Qualification Bids	18/09/2018 by 4.00 PM
8.	Declaration of eligible/qualified bidders	To be notified
9.	Opening of Financial Bids	To be notified
10.	Letter of Award	To be notified
11.	Submission by Bidder	The Selected Bidder shall be required to conform to the following requirements: a) within seven (7) days of being informed of selection i) Submit an original solvency certificate of at least 5% of the Bidder's Estimate b) within fifteen(15) days of receipt of LOI: i) Submission of confirmation and acceptance of LOI. ii) Submission of Performance Bank Guarantee.
12.	Signing of Master Procurement, Construction & Maintenance Agreement	Subject to compliance of the above and other terms of RFP, the Master Procurement, Construction & Maintenance Agreement shall be signed within fifteen(15) days of receipt by Selected Bidder of Proforma for the Master

<b>Sr. No.</b>	<b>Event Description</b>	<b>Date</b>
		Procurement, Construction & Maintenance Agreement.
13.	Issuance of Work Orders	The Client shall intermittently and at its sole discretion issue Work Orders for each section of the Project, however, all Work Orders shall be issued within a period of [12] months from executing the Agreement.

### **3.11. General Terms of Bidding**

- 3.11.1.** A Bidder is eligible to submit only one Bid. In case the aforesaid is not conformed to, the Client shall reject all the Bids of which the defaulting Bidder is a party.
- 3.11.2.** Notwithstanding anything to the contrary contained in this RFP, the detailed terms of the Agreement shall have overriding effect and shall prevail over the terms of this RFP to the extent of any repugnancy between them; provided, however, that any conditions or obligations imposed on the Bidder hereunder shall continue to have effect in addition to its obligations under the Agreement.
- 3.11.3.** The Bid shall be furnished in the format exactly as per Appendices 1-13 i.e. Qualification Bid and Financial Bid as per Appendices. Bid Percentage shall be indicated clearly in both figures and words, in prescribed format of Financial Bid and it will be signed by the Bidder's authorised signatory. In the event of any difference between figures and words, the amount indicated in words shall be taken into account.
- 3.11.4.** Any entity which has been barred by the Central/ State Government, local authority, statutory body, or any entity controlled by it ("**Public Entity**"), from participating in any project (EPC, BOT, PPP or O&M), and the bar subsists as on the date of bidding, would not be eligible to submit the Bid. A Bidder should in the last 3 (three) years, have neither failed to perform any contract, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against the Bidder nor been expelled from any project or contract by any Public Entity nor have had any contract terminated by any public entity for breach by such Bidder.
- 3.11.5.** Any condition or qualification or any other stipulation contained in the Bid shall render the Bid liable to rejection on account of being a non-responsive Bid.
- 3.11.6.** The Bidding Documents including this RFP and all attached documents are and shall remain the property of the Client and are transmitted to the Bidders solely for the purpose of preparation and the submission of a Bid in accordance herewith. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The provisions of this Section shall also apply *mutatis mutandis* to Bids and all other documents submitted by the Bidders, and the Client will not return to Bidders any Bid or any document, annexure, exhibit attached therein, or any information provided along therewith.
- 3.11.7.** Any award of the Project pursuant to this RFP shall be subject to the terms of the Bidding Documents and also fulfilling the criterion as mentioned *inter alia* in Section 4.1.2 and 4.2.

### **3.12. Proprietary Data**

**3.12.1.** All documents and other information supplied by the Client or submitted by a Bidder to the Client shall remain or become the property of the Client. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The Client will not return any Bid or any information provided along therewith. The Client, in its sole discretion, may scan, print, copy, circulate the Bid, and the documents attached thereto, for the purposes of evaluating bids and other activities.

**3.13. Due Diligence by Bidders**

**3.13.1.** Bidders are encouraged to inform themselves fully about the Project and the Project Sites, by visiting the Project Sites, sending written queries (if any) to the Client.

**3.13.2.** The Bidders are also advised to study all instructions, forms, terms, requirements and other information in the Bidding Documents carefully.

**3.13.3.** The response to this RFP should be full and complete in all respects. Failure to furnish any information required by the RFP or submission of a Bid not substantially Responsive to the RFP in any respect will be at the bidder's risk entirely and may result in rejection of its Bid. For Bidders, which are IJV/JV, the Lead Member shall also be deemed to have acknowledged and agreed that in the event of a change in control of a IJV/JV whose credentials and experience was taken into consideration for the purposes of evaluating the Qualification Bid under and in accordance with the RFP the Bidder shall be deemed to have knowledge of the same and shall be required to inform the Client forthwith along with all relevant particulars about the same and the Client may, in its sole discretion, disqualify the Bidder or withdraw the Letter of Intent ("**LOI**") from the Bidder that is selected ("**Selected Bidder**"), as the case may be. In the event, such change in control occurs after signing of the Agreement it would, notwithstanding anything to the contrary contained in the Agreement, be deemed to be a breach of the Agreement, and the same shall be liable to be terminated without the Client being liable in any manner whatsoever to the Bidder. In such an event, notwithstanding anything to the contrary contained in the Agreement, the Client shall be entitled to forfeit and appropriate the EMD or Security Deposit or Performance Bank Guarantee, as the case may be, as damages, without prejudice to any other right or remedy that may be available to the Client under the RFP and/ or the Agreement or otherwise.

**3.13.4.** Bidders are encouraged to submit their respective Bids after visiting the Project Site and ascertaining for themselves the Project Site conditions, traffic, location, surroundings, climate, availability of power, water and other utilities, access to Site, handling and storage of materials, weather data, Applicable Laws and regulations, and any other matter considered relevant by them. The Bidders are advised to visit the Project Site and familiarise themselves of the Project with the stipulated time of submission of the Bid. No extension of time is likely to be considered for submission of Bids.

**3.13.5.** It shall be deemed that by submitting the Bid, the Bidder has:

- (a) visited the Project Site and has ascertained the Project Site conditions, locations, climate, availability of infrastructure and is well aware of Applicable Laws and regulations of the State;
- (b) made a complete and careful examination of the Bidding Documents;
- (c) received all relevant information requested from the Client;
- (d) accepted the risk of inadequacy, error or mistake in the information provided in the RFP or furnished by or on behalf of the Client;
- (e) satisfied itself about all matters, things and information including matters referred to in this Section as may be necessary and required for submitting an informed Bid, execution of the Project in accordance with the Bidding Documents and performance of all of its obligations there under;
- (f) acknowledged and agreed that inadequacy, lack of completeness or incorrectness of information provided in the Bidding Documents or ignorance of any of the matters referred to in this Section 2.6 shall not be a basis for any claim for compensation, damages, extension of time for performance of its obligations, loss of profits, etc. from the Client, or a ground for termination of the Agreement;
- (g) acknowledged that it does not have a Conflict of Interest;
- (h) agreed to be bound by the undertakings provided by it under and in terms hereof;  
and
- (i) made its own independent due diligence as provided in Section 4.6 and satisfied itself on the viability of the Project.

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

**3.14. Bid and other Costs**

**3.14.1.** The Bidders shall be responsible for all costs associated with the preparation of their Bids and their participation in the Bid, including but not limited to, costs incurred to conduct informative and other diligence activities, participation in meetings/discussions/presentations, preparation of the Bid, in providing any additional information required by the Client to facilitate the evaluation process and in finalising a definitive Agreement or all such activities related to the Bidding Process. The Client shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding Process.

**3.14.2.** The Bidding Documents does not commit the Client to execute the Agreement or to engage in negotiations. Further, no reimbursable cost may be incurred in anticipation of award. All materials submitted by the Bidder shall become the property of the Client and may be returned at its sole discretion.

**3.15. Verification and Disqualification**

**3.15.1.** The Client reserves the right to verify all statements, information and documents submitted by the Bidder in response to the RFP and the Bidder shall, when so required by the Client, make available all such information, evidence and documents as may be necessary for such verification. Any such verification, or lack of such verification, by the Client shall not relieve the Bidder of its obligations or liabilities hereunder nor will it affect any rights of the Client thereunder.

**3.15.2.** The Client reserves the right to reject any Bid and forfeit the EMD, Performance Bank Guarantee or Security Deposit if:

- (a) at any time, a material misrepresentation is made or uncovered; or
- (b) the Bidder does not provide, within the time specified by the Client, the supplemental information sought by the Client for evaluation of the Bid. Such misrepresentation/improper/inadequate response may lead to the disqualification of the Bidder, at the Client's sole discretion. If such disqualification/ rejection occurs after the Bids have been opened and the Selected Bidder gets disqualified/ rejected, then the Client reserves the right to:
  - (i) invite the remaining Bidders to submit Bids; or
  - (ii) take any such measure as may be deemed fit in the sole discretion of the Client, including annulment of the Bidding Process.

**3.15.3.** In case it is found during the evaluation or at any time before signing of the Agreement or after its execution and during the period of subsistence thereof, including the Contract Period thereby granted by the Client, that one or more of the qualification conditions have not been met by the Selected Bidder or the Selected Bidder has made material misrepresentation or has given any materially incorrect or false information, the Selected Bidder shall be disqualified forthwith, if not yet appointed as the Contractor either by issue of the LOI or entering into the Agreement, and if the Bidder has already been issued the LOI or has entered into the Agreement, as the case may be, the same shall, notwithstanding anything to the contrary contained therein or in this RFP, be liable to be terminated, by a communication in writing by the Client to the Selected Bidder, without the Client being liable in any manner whatsoever to the Selected Bidder or Contractor, as the case may be. In such an event, the Client shall forfeit the EMD or Security Deposit or Performance Bank Guarantee, as the case may be, as compensation and damages payable to the Client for, inter alia, time, cost and effort of the Client, without prejudice to any other right or remedy that may be available to the Client.

### **3.16. Clarifications in the RFP/Tender**

**3.16.1.** Bidders requiring any clarification on the RFP may notify the Client in writing or email in accordance with the RFP. The Bidders should send in their queries before the date specified in the schedule of Bidding Process. The Client shall endeavour to respond to the queries within a reasonable timeframe, at the very least within a week from submission of the query. The responses will be posted on the websites mentioned in the Bidding Document.

**3.16.2.** The Client shall endeavour to effectively respond to the questions raised or clarifications sought by the Bidders. However, the Client reserves its right to not respond to any question or provide any clarification, in its sole discretion, and nothing in this Section shall be taken or read as compelling or requiring the Client to respond to any question or to provide any clarification. The Client shall not take any responsibility for any postal or any other delay in response.

**3.16.3.** The Client may also on its own motion, if deemed necessary, issue interpretations and clarifications to all Bidders by issuing a corrigendum or by any other nomenclature. All clarifications and interpretations issued by the Client shall be deemed to be part of the RFP. Verbal clarifications and information given by the Client or its employees or representatives shall not in any way or manner be binding on the Client.

### **3.17. Amendment of RFP**

**3.17.1.** At any time prior to the deadline for submission of RFP, the Client may, for any reason, whether at its own initiative or in response to clarifications requested by a Bidder, modify the RFP by the issuance of an addendum.

**3.17.2.** Any addendum thus issued will be sent in writing to all those who have obtained the RFP and also posted on <https://mahatenders.gov.in>. Such addendum or corrigendum shall be an integral part of the RFP.

**3.17.3.** In order to afford the Bidders a reasonable time for taking an addendum into account, or for any other reason, the Client may, at its own discretion, extend the Bid Submission Date, if it may deem fit as per its sole discretion.

### **3.18. Bid and Performance Security**

#### **3.18.1. Earnest Money Deposit**

- (i) Bidders at the Qualification Stage shall submit, along with their Bids the Earnest Money Deposit (0.5% of the estimate provided for in BOQ, Schedule B) amounting to INR 43,86,900/- (Indian Rupees Forty-three Lakhs Eighty Six Thousand Nine Hundred Only) in favour of Chief Executive Officer, Solapur Smart City Development Corporation Limited by way of online payment to the account with the following details:

EMD will be accepted only by RTGS / NEFT in the name of SCDCL as per regular [https:// mahatenders.gov.in](https://mahatenders.gov.in) process.

Alternatively, the bidder may submit the EMD in the form of Bank guarantee. In case the bidder submits the EMD by way of BG it shall attach bank Guarantee through EMD exemption tab in the e-bid submission. In such case, the amount of EMD shall be paid in the form of Bank Guarantee of any nationalized Bank/Scheduled Bank in the form prescribed by the SCDCL on stamp paper amounting to the adjudicated amount as per the relevant Stamp Act. The scanned copy for the same should be uploaded with the tender document along with technical bid. The branch of the nationalized Bank/Scheduled Bank issuing the BG shall be in Solapur City only. BGs issued by any branch outside the city shall be treated as non-submission of the EMD and the bid shall stand rejected summarily.

Earnest Money Deposit (EMD) Exemption Certificate issued by state government or any other organization shall not be accepted. If any bidder uses any EMD Exemption Certificate, in spite of this instruction, its bid shall be summarily rejected.

The bidder shall submit the original copy of bank guarantee at the time of opening of the technical bid.

- (ii) In case a Bid is submitted without EMD as mentioned above then the Client reserves the right to reject the Bid without providing opportunity for any further correspondence to the concerned Bidder.
- (iii) Unsuccessful Bidder's EMD will be discharged/ returned as promptly as possible, but not later than ninety(90) days after signing of the Agreement with the Selected Bidder or as per prevalent standard procedures for procurement of the SCDCL. The EMD of the selected bidder shall be returned/reimbursed, at no interest, after it has submitted the Performance Security and executed the contract agreement.
- (iv) The EMD may be forfeited as per the provisions provided in this RFP and more specifically elucidated herein under:



- (a) If a Bidder withdraws their Bid or decreases their quoted Bid Percentage during the contract period of bid validity or its extended period, as the case may be; or
- (b) In the case of a Selected Bidder, if the Selected Bidder fails to sign the Agreement or to furnish the Performance Bank Guarantee within specified time; or
- (c) During the Bidding Process, if a Bidder indulges in any such deliberate act as would jeopardize or unnecessarily delay the process of bid evaluation and finalization; or
- (d) During the bid process, if any information found wrong / manipulated / hidden in the Bid.

The decision of the Client regarding forfeiture of the EMD and rejection of bid shall be final and shall not be called upon question under any circumstances.

### 3.18.2. Performance Bank Guarantee and Security Deposit

- (i) The Selected Bidder shall at its own expense, deposit with the Client, within fifteen (15) days of the LOI, an unconditional and irrevocable performance bank guarantee ("**Performance Bank Guarantee**") from a list of Approved Banks as per the format given in this Bidding Documents, payable on demand, for the due performance and fulfilment of the Agreement by the Selected Bidder.
- (ii) This Performance Bank Guarantee will be for an amount equivalent to five percent (5%) of the individual work order. All charges whatsoever such as premium, commission, etc. with respect to the Performance Bank Guarantee shall be borne by the Selected Bidder. The Performance Bank Guarantee letter format can be found in the Appendix 5 of this RFP. In case the Bank Guarantee is issued by a foreign bank located outside India, conformation of the same by any Approved/Nationalized/Scheduled Bank is required. The Performance Bank Guarantee shall be valid for at least two months after the conclusion of all obligations of the Contractor under the Agreement including those related to maintenance and repair or rectification of defects.
- (iii) In addition to the Performance Bank Guarantee, an additional interest free security deposit for an amount equivalent to 5 (five) % of the Contract Amount ("**Retention Money**"), shall be retained by the Client during the Contract Period and deducted at the rate of 6% from each interim payment made to the contractor till such time the entire 5% is realized.
- (iv) Upon the final taking over certificate being given by the Client for all project sites and certification of the final bill the Retention Money shall be released to the contractor.
- (v) The Performance Bank Guarantee shall be discharged/ returned by department upon being satisfied that there has been due performance of the obligations of the Selected Bidder under the Agreement; but in no event before 60 days after the expiry of the Defects Liability Period. However, no interest shall be payable on the Security Deposit or Performance Bank Guarantee.

### **3.19. Preparation and Submission of Bids (Format of Submission of Bids)**

**3.19.1.** Documents comprising the Qualification Bid in the First Part and Financial Bid in the Second Part is specified in the 'List of Documents' to be submitted along with Financial Bid as specified in Appendix 4.

**3.19.2.** Bidders shall provide all the information sought under this RFP and submit their Bids in the formats specified in this RFP. Both the Qualification Bid and Financial Bid will be submitted online, prior to the Bid Submission Date, as follows:

- (a) The detailed information regarding the submission can be obtained from the e-procurement portal: [https:// mahatenders.gov.in](https://mahatenders.gov.in). Bidders are requested to register themselves with the e-procurement portal and familiarize themselves with the steps of the e-procurement process to ensure all processes are completed before submission of Bids.
- (b) Digital Signature is a prerequisite for online submission. The Client will not be responsible for any delay or technical issues faced by the Bidder/s in uploading their online tenders. The Bidders are advised to submit their Bids adequately in advance to avoid the delays due to such instances.
- (c) The Bidder shall digitally upload a copy of the RFP, along with any amendments, duly signed with digital signature of its authorized signatory. Furthermore, whilst submitting the application for Qualification, the digital copy of the following documents shall be uploaded:
  - (i) Annexure A: Letter for the Qualification Bid;
  - (ii) Annexure B: Letter of Undertaking;
  - (iii) Annexure C: Letter of Conformation/ Transmittal;
  - (iv) Appendix 6: PQ\_1 Years of operation;
  - (v) Appendix 7: PQ\_2 Financial Strength – Turnover;
  - (vi) Appendix 8: PQ\_3 Financial Strength – Net worth;
  - (vii) Appendix 9: PQ\_4 Relevant Experience – Similar Projects and Services;
  - (viii) Appendix 10: Declaration of Compliance
  - (ix) Appendix 11: Details of any past or pending litigation or arbitration proceedings, references, claims or demands, as the case may be;

(All the above documents should be signed, and stamped by the Bidder and duly notarised/ apostilled (in case of foreign bidder) in the jurisdiction of the Bidder.)

Further, the Bidder shall submit along with their application, the EMD amount and Tender Fee.

- (d) The Financial Bid to be submitted in electronic form. The Bidder shall submit a Power of Attorney as per the format provided in **Appendix 3** authorizing the signatory of the Bid to commit the Bidder and in case the Bidder is a JV, then Power of Attorney as per the format provided in **Appendix 3C**, authorizing the Lead Member to sign the Bid on behalf of the JV. Furthermore, whilst submitting the Financial Bid, the digital copy of the following documents shall be uploaded:
- i. Appendix 2: Format of Financial Bid;
  - ii. Appendix 3: Financial Proposal Declaration;
  - iii. Appendix 4: Power of Attorney for Signing the Bid;
  - iv. Appendix 4C: Power of Attorney for Signing the Bid (In case of JV)
  - v. Appendix 4B: Joint Bidding Agreement (In case of JV)
  - vi. Appendix 5: Performance Bank Guarantee should be submitted within 7 days of Award of Individual work order
- (All the above documents should be signed, and stamped by the Bidder and duly notarised/ apostilled in the jurisdiction of the Bidder.)
- (e) Bidders should note the Bid Submission Date for submission of Bidding Documents. Except as specifically provided in this RFP, no supplementary material will be entertained by the Client, and that evaluation will be carried out only on the basis of Bidding Documents submitted by the closing time of Bid Submission Date. The Client, at its sole discretion, may request the Bidders to provide additional material information or documents subsequent to the Bid Submission Date and any unsolicited material if submitted will be summarily rejected accordingly.
- (f) The Bidding documents shall be submitted online and digitally signed by the authorized signatory of the Bidder. All the alterations, omissions, additions, or any other amendments made to the Bidding Documents shall be digitally signed by the person(s) signing the Bidding Documents. The Bidding Documents must be digitally signed by the authorized signatory (the “**Authorized Signatory**”) as detailed below:
- i. by the proprietor, in case of a proprietary firm; or
  - ii. by a partner, in case of a partnership firm and/or a limited liability partnership; or
  - iii. by the authorized representative of the Lead Member, in case of JV; or
  - iv. by a duly authorized person holding the Power of Attorney, in case of a Limited Company or a Private Limited company.
- (g) The Bids of only those Bidders shall be considered for evaluation who have made online payment of Tender Fee in addition to the EMD prescribed in this RFP, without which Bids will not be accepted. The EMD will be submitted by way of demand draft/ Bank Guarantee in favour of the Chief Executive Officer, Solapur City Development Corporation Limited by way of demand draft from a Nationalized Bank except co-

operative banks, payable at Solapur along with a physical copy of the Bidding Documents duly signed by the Authorized Signatory of Bidder.

- (h) The Bidder shall provide accurate information about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the last five (5) years. A history of award(s) against the Bidder will result in summary rejection of the Bid. Suppression of any information or material in this regard would be construed as a fundamental breach and the Client reserves its right to take appropriate action including rejection/disqualification of the Bid, forfeiture of EMD, Security Deposit and Performance Bank Guarantee etc. as may be deemed fit and proper by the Client at any time without requiring to give any notice to the Bidder in this regard.
- (i) Bidders shall provide such evidence of their continued eligibility criteria fulfilment in terms hereof to the Client as the Client shall reasonably request.

### **3.20. Bid Submission Date**

**3.20.1.** Bids must be received by the Client at the web portal mentioned in the RFP as per Data Sheet ("**Bid Submission Date**").

**3.20.2.** The Client may, at his discretion, extend the Bid Submission Date by issuing an addendum in respect thereof.

**3.20.3.** In the event of Bid Submission Date being declared a holiday for the Client, the deadline for submission of Bid shall be the immediate next working day.

### **3.21. Late Bids**

Any Bid received by the Client after the Bid Submission Date will be summarily rejected by the Client.

### **3.22. Withdrawal of Bids**

**3.22.1.** The Bidder may withdraw its Bid after submission, provided that written notice of the modification, substitution or withdrawal is received by the Client prior to the Bid Submission Date. No Bid shall be withdrawn by the Bidder on or after the Bid Submission Date.

**3.22.2.** Notwithstanding anything contained in this RFP, the Client reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids, at any time prior to issuance of Letter of Award, 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 Client 's action.

### **3.23. Evaluation Process and Determination of Responsiveness**

**3.23.1.** The Bids received by the Client will be scrutinized and evaluated to establish the Bid's responsiveness ("**Responsive**"). A Bid may be deemed non-responsive ("**Non-Responsive**") if:

- (a) It is not received by the Bid Submission Date in the formats and the manner as prescribed in this RFP;
- (b) It does not include sufficient information for it to be evaluated and / or it is not in the formats specified which materially affect the evaluation process; and

- 3.23.2.** It is not signed and / or sealed in the manner and to the extent indicated in this RFP.
- 3.23.3.** The Client reserves the right to reject any Bid which is Non-Responsive and no request for alteration, modification, substitution or withdrawal shall be entertained by the Client in respect of such Bid. The Bidder's Bid must be complete in all respects, conform to all the requirements, terms and conditions and specifications as stipulated in the Bidding Document.
- 3.23.4.** There should be strictly no mentioning of the Bid Percentage in any part of the Bid other than the Financial Bid, failing which the submitted bid shall stand summarily rejected.

**3.24. Opening of the Qualification Bid (First Part)**

- 3.24.1.** The Client will open the Qualification Bids received in public, containing the Qualification Bid and announce the names of Bidders, in the presence of the nodal officer and the Bidders or their representatives who choose to attend on the date and time mentioned in the RFP. In the event of specified date of Bid opening being declared as a holiday for the Client, the Bid will be opened at the appointed time and location on the immediate next working day. All Bids should meet the Qualification requirements as stipulated in Appendix 4A. Moreover, only Bids which qualify the criteria stipulated in the Qualification requirements shall be considered and allowed to proceed towards the Second Part i.e. for the Financial Bid of the Bidding process. Furthermore, all Bids should be accompanied by the List of documents to be sent along with the Qualification Bid as specified in Appendix 1, and with all other documents which have been specified under this RFP in all aspects, required for the Qualification Bid.
- 3.24.2.** Only Bids that are opened and read out at the Bid opening and are accompanied with the EMD shall be considered further for the Bidding Process.
- 3.24.3.** If any information furnished by the Bidder is found to be incomplete, or contained in formats other than those specified herein, the Client may, in its sole discretion, exclude the relevant information for consideration of eligibility and qualification of the Bidder.
- 3.24.4.** All the Bids shall be opened one at a time, reading out: The name of the Bidder and whether there is a modification; the presence of Earnest Money Deposit; and any other details as the Client may consider appropriate.
- 3.24.5.** The Client shall prepare a record of the proposal opening that shall include, at a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; and the presence or absence of Earnest Money Deposit. The Bidders' representatives who are present shall be requested to sign the attendance sheet.

**3.25. Evaluation of Qualification Bid**

**3.25.1.** Prior to evaluation of Financial Bids, the Client shall determine whether the Earnest Money Deposit furnished along with the Bid conforms to the amount and validity period as specified in this RFP. If non-confirming, then the Bid shall be rejected forthwith by the Client on account of being Non-Responsive.

**3.25.2.** To determine whether the Bids are Responsive or not, all Bids must be in confirmation with the Qualification requirements being annexed with all documents as specified in Section 4.12.2 herein above. Further, such Bids need to be accompanied by the EMD amount and the receipt of payment of the Tender Fees. The Client may require written clarifications from the Bidders to clarify any ambiguities and uncertainties arising out of the evaluation of the Bidding Documents (to be stated precisely as it should be in the Client's interest).

**3.25.3.** Only the Bids qualifying the evaluation of Qualification Bid will be considered for evaluation of Financial Bid.

### **3.26. Opening of Financial Bid (Second Part)**

**3.26.1.** The Financial Bid shall not be opened by the Client until the evaluation of the Qualification Bid has been completed.

**3.26.2.** The Client will open the Financial Bid of only Pre-Qualified Bidders as per Section 4.19, in the presence of the nodal officer / designated representatives of the Bidder who choose to attend, at the time, date and place, as decided and communicated by the Client.

**3.26.3.** Financial Bid from Bidders who have failed to qualify in evaluation of the Qualification Bids will not be opened. Only Bids that are opened and read out in accordance with Section 4.19 shall be considered further.

**3.26.4.** Consequently, whilst opening of the Financial Bids, the Client shall read out the names of the Bidders. Furthermore, the Client shall also read out the Bid Percentage quoted in each respective Financial Bids, the Client shall also read out if there are any modifications in the Bids.

**3.26.5.** The Client shall prepare a record of the Bid opening that shall include, at minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; the Bid Percentage, and any other details as the Client may consider appropriate. The Bidders' representatives who are present shall be requested to sign the attendance sheet. A copy of the record shall be distributed to all Bidders.

### **3.27. Evaluation of Financial Bid**

**3.27.1.** The Financial Bid will be evaluated by the Client for completeness and accuracy, if any, in costing of any item shall not entitle the Bidder to be compensated and the liability to fulfil the obligations as required under the Project within the total quoted Bidder's Estimate, shall be that of the Bidder.

**3.27.2.** The Client will award the works to the Selected Bidder based on the evaluation of Financial Bid.

- 3.27.3.** The Bidder passing the Qualification Bid, and meeting all the necessary documentations required by the Qualification Bid and the Financial Bid prescribed in the foregoing Sections 4.19 and 4.21 respectively together with having the lowest Bid Percentage will be identified as the Selected Bidder for the Project.
- 3.27.4.** The Client may, at its sole discretion, choose to accept the Bid of the Selected Bidder or invite the Selected Bidder for further negotiations or reject any offer.
- 3.27.5.** If the tenderer has quoted the offer below than the estimated rates put to the tender, the tenderer shall be required to submit **Additional Security Deposit (ASD)** after issue of letter of intent and prior to issue of work order

Rate quoted to estimated rate	Additional Security Deposit (Performance Security)
0 % up to 1 % below	Nil
1 % below up to 10 % below	1% of Estimated cost put to tender
Less than 10 % below	$\% \text{ of ASD} = (\% \text{ rate quoted} - 10) + 1$ <i>e.g. If a bidder quotes 14% below the estimated cost put to tender the amount of Additional Security Deposit (Performance Security) shall be <math>(14 - 10) + 1 = 5\%</math> Performance Security of estimated cost put to tender.</i>

### 3.28. Selection of Bidder

- 3.28.1.** After identification of the Selected Bidder, the Client shall, if choosing to proceed with the Bidding Process, notify the Selected Bidder of such identification through an LOI that it intends to accept the Bid for the Project subject to formal acceptance of the LOI, furnishing the Performance Security and execution of the contract agreement within the stipulated periods.

### 3.29. Correction of Arithmetical Errors

Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:

- a) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;



- b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with **ITB** shall result in the rejection of the Bid.

### **3.30. Currencies of Bid Payment**

**3.30.1.** All payments by the Contractor to the Client shall be made in Indian Rupees (“**INR**”) in accordance with the provisions of this RFP and the Agreement. Both the Parties may convert INR into any foreign currency as per applicable laws and the exchange risk, if any, shall be borne by Contractor.

**3.30.2.** The Bidder shall quote the figure in its Financial Bid in both figures and words, in INR.

### **3.31. Clarification sought by the Client from Bidders**

**3.31.1.** To assist in the examination, evaluation and comparison of Bids, the Client may, at its discretion, seek clarifications in writing from any Bidder regarding its Bid, ask any Bidder for authenticating the correctness of the information/details furnished by him in his Bid. Provided, that no change in the price or substance of the Bid shall be sought, offered or permitted except as required to confirm the correction of arithmetical errors discovered by the Client in the evaluation of the Bids.

**3.31.2.** Subject to the above, no Bidders shall contact the Client on any matter relating to his Bid from the time of Bid opening to the time the contract is awarded.

**3.31.3.** Any effort by the Bidder to influence the Client regarding the Client’s Bid evaluation, Bid comparison or contract award decisions may result in the outright rejection of his Bid.

### **3.32. Process to be Confidential**

**3.32.1.** Information relating to the examination, clarification, evaluation and recommendation for the Bidders shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional advisor advising the Client in relation to, or matters arising out of, or concerning the Bidding Process. The Client will treat all information, submitted as part of the Bid, in confidence and will require all those who have access to such material to treat the same in confidence. The Client may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert any right or privilege of the statutory entity and/ or the Client or as may be required by law or in connection with any legal process.

### **3.33. Contact during Evaluation**

**3.33.1.** Bids shall be deemed to be under consideration immediately after their opening and until such time as the Client makes an official intimation of the award. During this period of evaluation all the Bidders are strictly advised to refrain from contacting by any means whether directly or indirectly or through any representative, the Client or any of its directors, members, employees, staff and/or any person who may be related to SCDCL, on matters related to the Bids under consideration.

### **3.34. Correspondence with the Bidder**

**3.34.1.** All communications, including Bidding Documents should be addressed to: “The CEO, Solapur City Development Corporation Limited (“SCDCL”) New Planning Office, Near Milk Dairy, Saat Rasta, Solapur, 413003, Maharashtra, India and uploaded on the website mentioned in this RFP and in addition can be emailed to solapurcitydcl@gmail.com.

**3.34.2.** All communications should contain the following information:

Tender No. [SCDCL/ROAD/0X/2018] -

Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m,24m wide and total length 10.8km road/ street/ footpath/junction/related utilities ON PROJECT SITES IN SOLAPUR CITY UNDER SMART CITIES MISSION`

**3.35. Language**

**3.35.1.** The Bid and all related correspondence and documents in relation to the Bidding Process shall be in English language. Supporting documents and printed literature furnished by the Bidder with the Bid may be in any other language provided that they are accompanied by appropriate translations in the English language. Supporting materials, which are not translated into English, may not be considered. For the purpose of interpretation and evaluation of the Bid, the English language translation shall prevail.

**3.36. Price Variation**

Price Variation is not applicable to this tender.

## SECTION 4. FRAUD AND CORRUPT PRACTICES

- 4.1. The Bidders and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process and subsequent to the issue of the LOA as and during the subsistence of the Agreement. Notwithstanding anything to the contrary contained herein, or in the LOA or the Agreement, the Client may reject a Bid, withdraw the LOA, or terminate the Agreement, as the case may be, without being liable in any manner whatsoever to the Bidder or Contractor, as the case may be, if it determines that the Bidder or Contractor, as the case may be, has, directly or indirectly or through an agent, engaged in Corrupt Practice, Fraudulent Practice, Coercive Practice, Undesirable Practice or Restrictive Practice in the Bidding Process. In such an event, the Client shall be entitled to forfeit and appropriate the EMD or Security Deposit or Performance Bank Guarantee, as the case may be, as damages, without prejudice to any other right or remedy that may be available to the Client under the Bidding Documents and/ or the Agreement or otherwise.
- 4.2. Blacklisting - Without prejudice to the rights of the Client under Section 4.1 hereinabove and the rights and remedies which the Client may have under the LOI or the Agreement, or otherwise if a Bidder or Contractor as the case may be, is found by the Client to have directly or indirectly or through an agent, engaged or indulged in any Corrupt Practice, Fraudulent Practice, Coercive Practice, Undesirable Practice or Restrictive Practice during the Bidding Process, or after the issue of the LOI or the execution of the Agreement, such Bidder or Contractor shall not be eligible to participate in any tender or RFP issued by the Client during a period of 3 (three) years from the date such Bidder or Contractor as the case may be, is found by the Client to have directly or indirectly or through an agent, engaged or indulged in any Corrupt Practice, Fraudulent Practice, Coercive Practice, Undesirable Practice or Restrictive Practices, as the case may be.
- 4.3. For the purposes of this Section 4, the following terms shall have the meaning hereinafter respectively assigned to them:
- (a) **“Corrupt Practice”** means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the Client who is or has been associated in any manner, directly or indirectly with the Bidding Process or the LOA or has dealt with matters concerning the Agreement or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the Client, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process); or (ii) engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the LOA or after the execution of the Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA or the Agreement, who at any time has been or is a legal, financial or technical adviser of the Client in relation to any matter concerning the Project;

- (b) **“Fraudulent Practice”** means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process;
- (c) **“Coercive Practice”** means impairing or harming or threatening to impair or harm, directly or indirectly, any person or property to influence any person’s participation or action in the Bidding Process;
- (d) **“Undesirable Practice”** means (i) establishing contact with any person connected with or employed or engaged by the Client with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or (ii) having a Conflict of Interest; and
- (e) **“Restrictive Practice”** means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Bidding Process or abstaining itself or any person from bidding as would have the effect of eliminating competition or a competitor.

## **SECTION 5. MISCELLANEOUS PROVISIONS**

- 5.1. Governing Law and Jurisdiction of the Court:** The Bidding Process shall be governed by, and construed in accordance with, the laws of India. The Courts at Solapur, Maharashtra shall have the exclusive jurisdiction over all disputes arising under, pursuant to and/or in connection with the Bidding Process and Bidding Documents.
- 5.2.** The Client, in its sole discretion and without incurring any obligation or liability, reserves the right, at any time, to:
- (a) suspend and/ or cancel the Bidding Process and/ or amend and/ or supplement the Bidding Process or modify the dates or other terms and conditions relating thereto;
  - (b) consult with any Bidder in order to receive clarification or further information;
  - (c) retain any information and/ or evidence submitted to the Client by, on behalf of, and/ or in relation to any Bidder; and/ or
  - (d) independently verify, disqualify, reject and/ or accept any and all submissions or other information and/ or evidence submitted by or on behalf of any Bidder.
- 5.3.** It shall be deemed that by submitting the Bid, the Bidder agrees and releases the Client, its employees, agents and advisers, irrevocably, unconditionally, fully and finally from any and all liability for claims, losses, damages, costs, expenses or liabilities in any way related to or arising from the exercise of any rights and/ or performance of any obligations hereunder, pursuant hereto and/ or in connection with the Bidding Process and waives, to the fullest extent permitted by Applicable Laws, any and all rights and/ or claims it may have in this respect, whether actual or contingent, whether present or in future.
- 5.4.** The Client shall have the right, to have any person removed who is considered unacceptable due to the reasons of security, efficiency, etc.
- 5.5. Indemnity:** The Bidders shall save, defend, indemnify, release and hold the Client harmless from and against any and all loss, damage, injury, liability, demands and claims for injury to or death of any person (including an employee of the Bidders or the Client) or for loss of or damage to property (including the Contractor's or the Client's property), in each case, whether directly or indirectly, in contravention of the terms and permissible activities as specified in this RFP or the Agreement. This indemnity shall apply whether or not the Client was or is claimed to be passively, concurrently, or actively negligent, and regardless of whether liability without fault is imposed or sought to be imposed on the Client. Such indemnity shall not apply to the extent that it is void or otherwise unenforceable under Applicable Law in effect on or validly retroactive to the date of this RFP or Agreement and, shall not apply where such loss, damage, injury, liability, death or claim is the result of the sole negligence or wilful misconduct of the Client.

**5.6. Applicable Law(s):** The Bidder has to follow all the applicable statutes, laws, bye-laws, rules, regulations, orders, ordinances, protocols, codes, guidelines, policies, notices, directions, judgments, decrees or other requirements or official directive of any government or court or other law, rule or regulation approval from the relevant governmental Client, government resolution directive, or other government restriction or any similar form of decision of, or determination by, or any interpretation or adjudication having the force of law in India as amended from time to time ("**Applicable Law**" or "**Law**") while providing these services.

**5.7. Survival:** Termination shall

- (a) not relieve the Bidders or the Client, as the case may be, of any obligations hereunder which expressly or by implication survive Termination hereof; and
- (b) except as otherwise provided in any provision of this RFP expressly limiting the liability of either Party, not relieve either Party of any obligations or liabilities for loss or damage to the other Party arising out of, or caused by, acts or omissions of such Party prior to the effectiveness of such Termination or arising out of such Termination.

All obligations surviving Termination shall only survive for a period of 3 (three) years following the date of such Termination.

**5.8. Amendments:** This RFP and Schedules and Bidding Documents together with any corrigendum and addendums constitute a complete and exclusive understanding of the terms of the RFP between the Client and the Bidders on the subject hereof any amendment or addendum or modification or corrigendum hereto, released by the Client by any nomenclature of shall be valid and effective, on all the Bidders hereto.

**5.9. Documents and Information:** The documents including this RFP document and all attached documents, provided by the Client are and shall remain or become the property of the Client and are transmitted to the Bidder solely for the purpose of preparation and the submission of a Bid in accordance herewith. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The provisions of this clause shall also apply mutatis mutandis to Bids and all other documents submitted by the Bidder, and the Client will not return to the Bidder any Bid, document or any information provided along therewith.

**5.10. Entire RFP:** This RFP along with its Appendices together constitute a complete and exclusive statement of the terms of the RFP between the Parties on the subject hereof, and no amendment or modification hereto shall be valid and effective unless such modification or amendment is agreed to in writing by the Parties and duly executed by persons especially empowered in this behalf by the respective Parties. All prior written or oral understandings, offers or other communications of every kind pertaining to this RFP are abrogated and withdrawn.

- 5.11. Severability:** If for any reason whatsoever any provision of this RFP is or becomes invalid, illegal, or unenforceable, or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal, or unenforceable, then the validity, legality, or enforceability of the remaining provisions shall not be affected in any manner. Moreover, the unenforceable provisions shall be severed and the remainder of the provisions of this RFP shall continue in full force and effect as if this RFP had been executed without the invalid, illegal or unenforceable provisions.
- 5.12. No Partnership:** This RFP shall not be interpreted or construed to create an association, joint venture or partnership between the Parties, or to impose any partnership obligation or liability upon either Party, and neither Party shall have any right, power or Client to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.
- 5.13. Third Parties:** This RFP is intended solely for the benefit of the Parties, and their respective successors and permitted assigns, and nothing in this RFP shall be construed to create any duty to, standard of care with reference to, or any liability to, any person not a Party to this RFP.
- 5.14. Assignments:** The Bidders comprehend that this RFP/Bid is non-assignable, nor the rights, benefits, and obligations hereunder save and except with prior written permission of the Client can be assigned, transferred or allocated to a third party. The Bidders shall not create or permit to subsist any Encumbrance over or otherwise transfer or dispose of all or any of its rights and benefits under the Bid Documents.
- 5.15. Notices:** Unless otherwise stated, notices to be given under this RFP including *inter alia* a notice of waiver of any term, breach of any term of this RFP, and termination of this Agreement, shall be in writing, and shall be given by hand delivery, recognised international courier, registered post, email, telex or facsimile transmission and delivered or transmitted to the Client and Bidders at their respective addresses, if the Notice is sent to the Client then it shall be sent to the following address set forth below:

If to the Client, at:

The Chief Executive Officer,  
Solapur City Development Corporation Limited (“**SCDCL**”),  
New Planning Office, Near Milk Dairy,  
Saat Rasta,  
Solapur, 413003  
Maharashtra, India  
Tel: -0217-2740300, Fax: -0217-2740306  
E-mail: - solapurcitydcl@gmail.com

Or such address, telex number, or facsimile number as may be duly notified by the Client and shall be deemed to have been made or delivered (i) in the case of any



communication made by letter, when delivered by hand, by recognised international courier or by mail (registered, return receipt requested) at that address and (ii) in the case of any communication made by telex or facsimile, when transmitted properly addressed to such telex number or facsimile number.

**5.16. Language:** All notices required to be given under this Tender and all communications, documentation, and proceedings which are in any way relevant to this Tender shall be in writing and in English language.

**5.17. Confidentiality:** The Parties shall treat the details of this Tender as private and confidential, except to the extent necessary to carry out obligations under it or to comply with Applicable Laws. The Bidders shall not publish, permit to be published, or disclose any particulars of the Works in any trade or technical paper or elsewhere without the written permission of the Client.

**5.18 Waiver:** Waiver by either Party of any default by the other Party in the observance and performance of any provision of or obligations under this RFP:

- (a) shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions or obligations under this RFP;
- (b) shall not be effective unless it is in writing and executed by a duly authorised representative of such Party;
- (c) shall not affect the validity or enforceability of this RFP in any manner;
- (d) neither the failure by either Party to insist on any occasion upon the performance of the terms, conditions, and provisions of this RFP or any obligation hereunder nor time or other indulgence granted by a Party to the other Party shall be treated or deemed as waiver/breach of any terms, conditions, or provisions of this RFP.

**5.19 Intellectual Property rights:** The Bidding Documents and other design documents made by (or on behalf of) the Client shall not, without the Client's consent, be used, copied or communicated to a third party by (or on behalf of) the Client for purposes other than those permitted under this RFP. As between the Parties, the Client shall retain the copyright and other intellectual property rights in the Bidding and other documents made by (or on behalf of) the Client. The Bidders may, at its cost, copy, use and obtain communication of these documents for the purposes of this Bid. They shall not, without the Client's consent, be copied, used or communicated to a third party by the Bidders, except as necessary for the purposes of the Bid.

## **SECTION 6. TERMINATION**

- 6.1.** The terms and conditions provided in this RFP shall be effective from the date hereof, and shall continue to remain in full force and effect until the date of signing of the Agreement, in case the Tender is awarded to the Selected Bidder. However, in case the Selected Bidder is not selected for award of the Project, this Tender will stand terminated upon intimation by the Client, that it has terminated the Tender. Refund of the Earnest Money Deposit submitted by the Bidders will be made in accordance to Section 4.11 *mutatis mutandis*, for the unselected/ unsuccessful Bidders, and or in case the Client cancels or terminates the Tender.

## **SECTION 7. DISPUTE RESOLUTION**

- 7.1.** Any disputes and or difference relating to this Bid or claims arising out of or relating to this Bid or breach, termination or the invalidity thereof or on any issue whether arising during the progress of the services or after the completion or abandonment thereof or any matter directly or indirectly connected with this Bid will be resolved through joint discussion of the authorized representatives of both the parties (the Client and the Bidder/Selected Bidder/Contractor as applicable). If the dispute is not resolved by joint discussion, then the matter will be referred for adjudication to an arbitral tribunal comprising of three arbitrators, one arbitrator to be nominated by the Client and the other one to be nominated by the Bidder/Selected Bidder/Contractor as applicable, and the third arbitrator shall be appointed by the two arbitrators so nominated. The third arbitrator shall act as the presiding arbitrator.
- 7.2.** All costs of the arbitration shall be borne by each party to the proceedings proportionately. However, all expenses incurred by each party in connection with the preparation, presentation of their respective proceedings and their own legal expenses including costs of their respective lawyer and/or solicitor, shall be borne by each party itself respectively. The award of the arbitral tribunal shall be final and binding on all the parties to the proceedings. The cost of arbitration shall be borne by the respective parties equally. The seat of arbitration shall be Solapur, Maharashtra, and the language of the arbitration shall be English. The parties agree that the arbitrators shall not have the right of lien on any arbitral award passed by the arbitral tribunal under any circumstances.
- 7.3. Rules governing arbitration proceedings:** The arbitration proceedings shall be governed by the Arbitration and Conciliation Act, 1996, as enacted in India, and as amended from time to time including provisions in force at the time the references made. During the pendency of arbitration proceedings, subject to any interim relief granted by the arbitral tribunal or any court of competent jurisdiction, each party shall continue to perform any obligations and make due payments to the other party in accordance with the RFP and the Agreement.
- 7.4.** Following the Maharashtra Government notification bearing GR No. 201610131731404912 dated 13th October, 2016 the 'Institutional Arbitration Policy' both the Parties to this Agreement shall submit their arbitration dispute for institutional arbitration and under the said institutional arbitration rules in cases wherein the said institution is approved by the Maharashtra Government, to the institutional arbitration centre on the date of submission of such dispute between the Parties to this Agreement.
- 7.5.** In the event that there is any discrepancy between the rules, by-laws or policies of the aforementioned arbitration institution, the arbitration institution's rule, by-law or policy, as the case may be, will prevail.

## **SECTION 8. COMPENSATION FOR DELAY OR LIQUIDATED DAMAGES**

### **8.1. Reduction of Compensation for Delay**

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 Compensation 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 with 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 Compensation and shall not affect the limit thereof.

**8.2.** In case of failure to comply with the schedule for the Project as stated in this RFP and Agreement read with Work Order(s), for the reasons solely attributable to the Contractor, the amount of liquidated damages ("**Liquidated Damages**") shall be equal to 0.1% (zero point one percent) of the Bidder's Estimate or any amount agreed between the Client and Contractor as consideration for each Project Site under respective Work Order, for each day of delay, with the maximum amount payable by the Contractor as Liquidated Damages being equal to 10% ("**Maximum LD Amount**").

**8.3.** If the stipulated schedule for completion of the Project has been extended by the Client, then the Liquidated Damages imposed, if any, shall be returned to the Contractor without any interest payment.

**8.4.** The Security Deposit paid by the Contractor may be forfeited by the Contractor to the extent of amount payable towards Liquidated Damages, at the sole discretion of the Client.

**8.5.** The Bidders, Selected Bidder, Contractor as the case may be acknowledges that the Liquidated Damages which are payable under this Section are in the nature of Liquidated Damages and (a) are not a penalty, (b) are fair and reasonable, and (c) represent a reasonable and genuine pre-estimate of the losses that would be incurred by the Client from such delay.

## SECTION 9. SPECIAL CONDITIONS OF CONTRACT [SCC]

### 1. General

The data and information given in the Contract Document are based on the investigations, planning and designs carried out so far. The data/information provided with the Bid document is meant for the reference and guidance only to the bidders. The successful bidder shall, therefore, satisfy himself about the adequacy and accuracy of the said data/information and interpretation thereof and collect fresh data/additional data/information and carry out/conduct further investigations and studies and prepare the proposal and get the approval of same from the Client. The Client shall not be responsible for the accuracy/adequacy of the data/information provided and interpretation thereof on the same by the Contractor.

The Contractor shall provide, in the joint names of SCDCL (Beneficiary) and the Contractor, insurance cover for events and terms as under:

**All Risk Policy:** From the Start Date to the stipulated Completion Date, for **120%** of the Accepted Price. The Contractor shall take out a CAR policy from Government Insurance Fund, Maharashtra Government, administered by Directorate of Insurance. The policy so obtained shall be with SCDCL named as the primary beneficiary and shall cover the entire period of construction (including all extensions) and also shall cover the defects liability period. The policy shall include cost of free supply material by SCDCL, if any. Government Insurance Fund, Maharashtra Government, administered by Directorate of Insurance doesn't cover the entire amount to be insured, as above, the Contractor shall be required to obtain the CAR policy for the maximum allowable amount from them. For the balance portion the Contractor shall seek insurance from other nationalized insurance companies or as a last preference from private insurance companies. For this balance portion of the insurance policy, the Contractor shall obtain prior written approval from the Engineer in charge and only upon receipt of such permission execute the policy.

An additional sum of 20 percent of the Accepted Price shall be for such replacement cost, to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature.

The insurance policy shall include a cross liability clause such that the insurance shall apply to the Contractor and to SCDCL as separately insured.

**Insurance against Accident of Workmen:** The Contractor shall insure against such liability and shall continue such insurance during the whole of the time that any persons are employed by him on the Works. Provided that, in respect of any persons employed by any Subcontractor, the Contractor's obligations to insure as aforesaid under this Sub-Clause shall be satisfied if the Subcontractor shall have insured against the liability in respect of such persons in such manner that SCDCL is indemnified under the policy, but the Contractor shall require such Subcontractor to produce to SCDCL, when required, such policy of insurance and the receipt for the payment of the current premium.

It is mandatory for the Contractor that all workmen appointed to complete the Contract work, are insured under Workmen's Compensation Insurance Policy

**Policy to cover Contractor's machinery & equipment:** The Contractor shall insure the Contractor's Equipment and other things brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site and submit a copy to SCDCL.

Provided that in case of the Contractor not taking such insurance, SCDCL shall be fully indemnified and shall not be liable for any claims put up by the Contractor in this respect irrespective of the reason(s) for loss, theft or damage to Contractor's machinery & equipment.

**Policy to cover defects:** From the date of taking over by SCDCL or the date of commencement of the Defects Liability Period to the intended date for completion of the Defects Liability Period for the Contract sum of the whole of the works or any part or parts thereof, as the case may be.

**Third Party Risk Policy**

The terms of the above policies shall be extended in advance by the Contractor in case of extensions of completion period or Defects Liability Periods as the case may be.

Policies and certificates for insurance shall be delivered by the Contractor to SCDCL for its approval before the Start Date. All such insurance policies shall provide for compensation to be payable to rectify the loss or damage incurred.

If the Contractor does not provide any of the policies and certificates required within the stipulated time period, SCDCL shall draw the insurance which the Contractor should have provided and recover the premiums SCDCL has paid, along with a fine of 100% of the premium so paid, from payments otherwise due to the Contractor under this contract or any other contract the Contractor is engaged in with SCDCL as an individual or entity or as part of any JV or, if no payment is due, the payment of the premiums shall be a debt due and shall be recovered by way of any and all legal recourses available to SCDCL.

In case of any loss or damage occurring due to any or all event(s) included in the Contractor's risks, the responsibility of the processing of the relevant claims shall vest with the Contractor and it shall forthwith proceed to process for the claim in accordance with the terms & conditions of the policy. In case such claim(s) require documentation by SCDCL, the Contractor shall obtain the communication (written) from the insurance company and submit it to SCDCL. Any reasonable and necessary documentation shall not be withheld or unreasonably delayed by SCDCL. Due to lack of diligence or neglect if the Contractor delays or avoids the processing of claims the losses or damages shall be to the account of the contractor who shall either remedy or rectify the losses or damages forthwith or SCDCL may take unilateral action and remedy or rectify the losses or damages after giving one week's notice to the Contractor and recover the costs along with the stipulated administrative charges (24.5%) from payments otherwise due to the Contractor under this contract or any other contract the Contractor is engaged in with SCDCL as an individual or entity or as part of any JV or JV or, if no payment is due, the payment of the premiums shall be a debt due and shall be recovered by way of any and all legal recourses available to SCDCL.

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

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

The insured amount for Third Party Policy shall not be less than 10 Lacs.

**Insurance of Sub Contractors:** The Contractor shall ensure that similar insurance policies are taken out by his Sub Contractor (if any) and shall be responsible for any claims or losses to SCDCL resulting from their failure to obtain adequate insurance protection in connection thereof. The Contractor shall produce or cause to be produced

by his Sub Contractors (if any) as the case may be relevant policy or policies and premium receipts as and when required by the Engineer in charge.

**Important Note:** For all the policies as provided here above, the primary beneficiary shall invariably be SCDCL and the Contractor shall be the secondary beneficiary. Any payments under these policies shall be first utilized to recoup the losses due to damages to SCDCL and only the leftover amount, if any, shall be payable to the Contractor.

## 2. Sufficiency of Bid

- 2.1 The Contractor shall be deemed to have visited and carefully examined the Project Site and it's surrounding to have satisfied himself to the nature and conditions of the means of transport and communications, whether by land or air, as available at present and as to possible interruptions thereto including the access and regress conditions for the Site. The Contractor is also deemed to have made enquiries, examined and satisfied himself as to the sites source for obtaining sand, stones, bricks and other materials, the sites for disposal of surplus materials and accommodation for depots, colonies, workshops and other infrastructure facilities as may be necessary for executing and completing the Works, as also the sub-soil water and variations thereof, storms, prevailing winds, climatic conditions and all other similar matters affecting the works including law & order.
- 2.2 Any neglect or omission or failure on the part of the Contractor in obtaining necessary and reliable information upon the foregoing or any other matter affecting the Contract shall not relieve him from any risks or liabilities or the entire responsibility for the completion of the Works in accordance with the Contract.

## 3. Safety, Security and Protection of the Environment

- i. The contractor shall comply with all applicable national, provincial, and local environmental laws and regulations.
- ii. The Contractor shall take all measures and precautions to avoid any nuisance or disturbance arising from the execution of the Works. This shall wherever possible be achieved by suppression of the nuisance at source rather than abatement of the nuisance once generated.
- iii. The Contractor shall take all the necessary precautions and abide by relevant rules and regulations of safety which are presently in force and which may come into force during the currency of the contract.
- iv. The Contractor shall also take such other additional precautions and resort to such other additional safety measures as may be directed from time to time by the Engineer-in-charge. Violation of any rules, regulations and guidelines contained herein will entail immediate termination of the contract.
- v. In the event of any spoil, debris, waste or any deleterious substance from the Site being deposited on any adjacent land, the Contractor shall immediately remove all such material and restore the affected area to its original state to the satisfaction of the Client.
- vi. The Contractor shall prevent any interference with the supply to or abstraction from,

and

- vii. Prevent any pollution of, water resources (including underground percolating water) as a result of the execution of the Works.
- viii. The Contractor shall at all times ensure that all existing water courses / bodies within, and adjacent to the Site are kept safe and free from any debris and materials arising from the Works.
- ix. The Contractor shall devise and arrange methods of working to minimize dust, gaseous or other air-borne emissions and carry out the Works in such a manner as to minimize adverse impacts on air quality.
- x. The Contractor shall utilize effective water sprays during delivery manufacture, processing and handling of materials when dust is likely to be created, and to dampen stored materials during dry and windy weather. Stockpiles of friable materials shall be covered with clean tarpaulins, with application of sprayed water during dry and windy weather. Stockpiles of material or debris shall be dampened prior to their movement, except where this is contrary to the Specification.
- xi. In the event that the Contractor is permitted to use gravel or earth roads for haulage, he shall provide suitable measures for dust palliation, if these are, in the opinion of the SMC/SCDCL officials necessary. Such measures may include spraying the road surface with water at regular intervals.
- xii. The Contractor shall take all necessary measures so that the operation of all mechanical equipment and construction processes on and off the Site shall not cause any unnecessary or excessive noise, taking into account applicable environmental requirements. The Contractor shall use all necessary measures and shall maintain all plant and silencing equipment in good condition so as to minimize the noise emission during construction works.
- xiii. The Contractor shall control the disposal of all forms of waste generated by the construction operations and in all associated activities. No uncontrolled deposition or dumping shall be permitted. Wastes to be controlled shall include, but shall not be limited to, all forms of fuel and engine oils, all types of bitumen, cement, surplus aggregates, gravels, bituminous mixtures, etc. The Contractor shall make specific provision for the proper disposal of these and any other waste products, conforming to local regulations and acceptable to the Project Manager.
- xiv. The Contractor shall plan and provide for remedial measures to be implemented in the event of occurrence of emergencies such as spillages of oil or bitumen or chemicals.
- xv. The Contractor shall provide the Client with a statement of the measures he intends to implement in the event of such an emergency which shall include a statement of how he intends to provide personnel adequately trained to implement such measures.
- xvi. Should any pollution arise from the Contractor's activities he shall clean up the affected area immediately at his own cost and to the satisfaction of the Project Manager, and shall pay full compensation to any affected party.

Note: - In addition to above contractor shall have to follow the instruction of IS codes for security and Safety (As per Handbook on construction And Safety Practices: SP 70: 2001)



#### 4. Protection of Trees and Vegetation

The Contractor shall ensure that no trees or shrubs or waterside vegetation are felled or harmed except for those required to be cleared for execution of the Works. The Contractor shall protect trees and vegetation from damage to the satisfaction of the Client. No tree shall be removed without the prior approval of the Client and any competent authorities. The Contractor should become aware during the period of the Contract that any tree or trees designated for clearance have cultural or religious significance he shall immediately inform the Client and await his instructions before proceeding with clearance. In the event that trees or other vegetation not designated for clearance are damaged or destroyed, they shall be repaired or replaced to the satisfaction of the Client, who shall also impose a penalty of twice the commercial value of any timber affected, as assessed by the Client.

Contractor shall keep provision of compensatory plantation in lieu of trees cut down in the process of development and construction. The contractor shall compensate plantation of 10 trees against felling/cutting of each mature tree. The area for compensatory tree plantation shall be decided in consultation with the Client. The contractor shall be responsible for protection, up-keeping, and watch & ward of the said compensatory plantation till 5 years of Projects defect liability period.

#### 5. Water Supply

The Contractor shall make his own arrangements at his own expense for water supply for construction, sectional testing if any and other purposes.

#### 6. Relations with Local Communities and Authorities

In setting and operating his plant and facilities and in executing the Works the Contractor shall at all-time bear in mind and to the extent practicable minimize the impact of his activities on existing communities. Where communities are likely to be affected by major activities such as road widening or laying of utility lines or the establishment of a camp, large borrow pit or haul road, he shall liaise closely with the concerned communities and their representatives and if so directed, shall attend meetings arranged by the Client to resolve issues and minimize impacts on local communities.

#### 7. Fire Prevention

The Contractor shall take all precautions necessary to ensure that no vegetation or property/ies along the line of the road outside the area of the permanent works is affected by fires arising from the execution of the Works. The Contractor shall obtain and follow any instructions of the competent authorities with respect to fire hazard when working in the vicinity of gas installations. Should a fire occur adjacent to the project road for any reason, the Contractor shall immediately suppress it. In the event of any other fire emergency in the vicinity of the Works the Contractor shall render assistance to the civil authorities to the best of his ability. Any scrub or plantation damaged by fire considered by the Client to have been initiated by the Contractor's staff or labour shall be replanted and otherwise restored to the satisfaction of the Client at the Contractor's expense.

#### 8. Interference with Traffic and Adjoining Properties

In case any operation connected with the works necessitates diversion, obstruction or closure of any road, waterway or any other right of way, the approval of respective competent authorities shall be obtained well in advance by the Contractor. In case the Contractor's operations obstruct access to adjacent properties, the Contractor shall be responsible to provide reasonable temporary access to the affected parties. In case the Contractor fails to provide adequate temporary facilities, this shall be deemed to be an Uncorrected Defect and the Client shall have the right to engage a third party to correct the Defect and the cost of such correction will be deducted from the Contract Price. The Contractor shall make appropriate lighting provisions at site and its surroundings or as instructed by Engineer in charge to prevent accidents.

## 9. Arrangement for Traffic During Construction

### 9.1 General

The Contractor shall at all times, carry out work on the City/Urban road in a manner creating least interference to the flow of traffic while consistent with the satisfactory execution of the same. For all works involving improvements to the existing urban road, the Contractor shall, in accordance with the directives of the Engineer as well as the Traffic Police, provide and maintain, during execution of the work, a passage for traffic either along a part of the existing carriageway under improvement or along an alternative diversion route. Before taking up any construction, the Contractor shall prepare a Traffic Management Plan for each road and submit it to the Engineer for prior approval. This plan should include inter alia:

A qualified safety officer with support staff to serve as a site safety team with required safety devices. Provision of traffic safety devices as per IRC: SP 55 with the following specifications:

Signage's of retro-reflective sheet of high intensity grade

Delineators in the form of cones/drums made of plastic/rubber having retro-reflective red and white bands, at a spacing of 5 m along with a reflective tape to be tied in between the gaps of cones/drums. A bulb preferably using solar energy is to be placed on the top of the cone/drum for delineation in the dark hours and night.

- Barricades using iron sheet with adequate iron railing/frame painted with retro-reflective paint in the alternate yellow and black & white stripes. Warning lights at 5 m spacing shall be mounted on the barricades and kept lit in dark hours and night.

Road markings with hot applied thermoplastic paint with glass beads.

Safety measures for the workers engaged including personal protection equipment

First aid and emergency response arrangements

### 9.2 Passage of Traffic along a Part of the Existing Carriageway under improvement

- a. For widening/strengthening existing carriageway where part width of the existing carriageway is proposed to be used for passage of traffic, treated shoulders shall be provided on the side on which work is not in progress. The treatment to the shoulder shall consist of providing at least 300 mm murum layer properly rolled and compacted in a width of at least 1.5 m and the surface shall be maintained throughout the period during which traffic uses the same to the satisfaction of the Engineer. Same shall be

borne by the Contractor no extra rate shall be payable on this account.

- b. After obtaining permission of the Engineer, the treated shoulder shall be dismantled, the debris disposed of and the area cleared as per the direction of the Engineer.

### 9.3 Traffic Safety and Control

The Contractor shall keep the roadway under construction open to traffic and pedestrian movement with proper drainage arrangement and smooth surface condition. Suitable ingress and egress shall be provided as necessary for all intersecting roads and for all abutting properties. Its purpose shall be to protect people from associated hazards and to prevent trespassing into the construction zone.

The Contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, marking, flags, lights, drums, traffic cones, delineators and flagmen as per the traffic management plan submitted by the Contractor and approved by the Engineer. An agreed phased programme for the diversion of traffic on the urban road shall be drawn up in prior consultation with the Engineer and the Traffic Police.

The Contractor shall keep all signs in proper position, clean and legible at all times.

The barricades erected on either side of the carriageway/portion of the carriageway closed to traffic, shall be of strong design to resist violation, and painted with alternate black and white stripes. On each approach, at least two signs shall be put up, one close to the point where transition of carriageway begins and the other 120 m away. The signs shall be of approved design and of reflective type, as directed by the Engineer. Two persons with red / green flag and whistle to be deputed at both ends of the barricades to regulate traffic. Red lanterns or warning lights of similar type shall be mounted on the barricades at night and kept lit throughout from sunset to sunrise.

At the points where traffic is to deviate from its normal path (whether on temporary diversion or part width of the carriageway) the channel for traffic shall be clearly marked with the aid of pavement markings, painted drums or a similar device to the directions of the Engineer. At night, the passage shall be delineated with lanterns or other suitable light source.

No material to project / spill beyond barricades.

This work item shall include all labour, equipment and services involved in the erection, maintenance, moving, adjusting, cleaning, relocating and storing of signs, barricades, drums, traffic cones and delineators furnished by the Contractor as well as all labour and equipment involved in the maintenance of traffic lanes and detours, for maintenance of traffic.

## 10. Maintenance of Diversions and Traffic Control Devices

Installation of Diversion & Traffic Control Devices shall be taken care by the Contractor no extra rate shall be payable on this account.

Signs, lights, barriers and other traffic control devices, as well as the riding surface of diversions shall be maintained in a satisfactory condition till such time they are required and as directed by the Engineer. Such temporary ways shall be kept free of dust by frequent applications of water.

#### 11. Variation in Quantities

The Contractor is instructed to note that there may be variation in the quantities of the BOQ. The bidder to investigate and make necessary site surveys at the time of bidding at their own cost. The bidder shall be paid on the basis of quantities executed. The Bidder to take prior approval from Authority before procurement of work items for electrical and storm water works.

#### 12. Transport of Contractor's Equipment or Temporary Works

Where the Contractor intends to use a particular route for the haulage of large quantities of materials he shall consult well in advance with any affected communities and submit in advance for the Client's approval a plan including but not limited to the proposed route, the existing condition of the pavement and bridges, the estimated number and type of vehicle movements per day, a programme for monitoring the condition of the pavement and structures, and measures for limiting vehicle speeds and dust nuisance in built-up areas. The Client reserves the right to disallow certain haul routes should these in his opinion cause or be likely to cause unreasonable nuisance or hazards to the public. The Client's approval will not remove the Contractor's obligations under this Sub-Clause to prevent and repair damage to roads or his liability for compensation for any accidents caused by his vehicles.

#### 13. Work in Monsoon and Dewatering

The execution of the work may entail working in the monsoon also. The contractor must maintain labour force as may be required for the job and plan and execute the construction and erection according to the prescribed schedule. No special/ extra rate will be considered for such work in monsoon. The contractor's rate shall be considered inclusive of cost of dewatering required if any and no extra rate shall be payable on this account.

#### 14. Site Clearance

Before handing over the work to the Authority, the contractor shall remove all temporary structure like the site offices, cement godown, stores, labour hutments etc., scaffolding rubbish, left over materials tools and plants, equipment etc., clean and grade the site to the entire satisfaction of the Engineer-In-Charge.

#### 15. Site Documents

The following site documents shall mainly be maintained by the contractor at site:

Copy of contract documents and drawings.

- Computerized bill format. Site Order Book.
- Material testing registers / Quality Inspection Reports. Measurement books on computerized format.

- Progress bar chart. Sample approval register. Hindrance Register.
- Work Diary.
- Deviation/variation order registers. Cement consumption register.
- Reinforcement registers. Concrete cube test register. Slump test register.
- Silt content and sand bulkgage register.
- Daily Progress Report
- Monthly progress Report
- Instruction/ Triplicate book
- Delay Analysis

#### 16. Samples and Testing of Materials

- i. All materials to be used on the work such as cement, lime, bricks, aggregates, steel, stones, asphalt, wood, tiles bitumen etc. shall be got approved in advance from the Engineer or his authorized representative on work and shall pass the test or analysis
- ii. The Contractor shall establish a Field laboratory for the various field tests for items like concrete cubes, cement, aggregates, sand, bitumen and bitumen products , soil, field density and similar items as directed by the Engineer. A Site Laboratory of approximately minimum 3.0 x 4.0 m. area with platform etc. shall be constructed as directed by the Engineer.

The Laboratory must have the following minimum equipment:

	Weigh Balance 10 kg & 20 kg. capacity	2 No Each
	Electronic Balance 5 KG Capacity.	2No.
	IS Sieves (For Coarse & Fine Aggregates) murum	2 Set (Each)
	Glass measuring cylinders(10 ml, 100 ml, 250 ml, 500 ml )	4No (Each)
	Moisture Meter	1 No.
	Field density test equipment with sand pouring cylinder, 3 litres & 15 litres capacity, cutter etc.	4 Set.
	Bitumen Extraction Apparatus (Manual)	2 No.
	Thermometer (Digital)	2 No.
	Electrically Operated Oven, Thermostatically controlled , Range upto 200 <sup>o</sup> Sensitivity 1 <sup>o</sup> C.	1 No.
	Aggregate Impact Value Test Apparatus	1 Set
	Flakiness and Elongation Test Apparatus	2 Set

	CTM	1 No.
	Slump Cone Test Apparatus	2 Set
	Concrete Cube Mould	3 Set
	First Aid Box	1 Set

- iii. Construction of field Laboratory well equipped with equipment as listed above is incidental to the work and no separate payment will be made for this. He should also obtain all relevant I.S. Codes, Specification books and be kept at site office. The equipment shall be sufficient in numbers to carry out testing as per schedule.

#### 17. Site Office

The Contractor shall establish 2 nos 8 seater each, Porta Cabins as Site Office, with following facilities in each Porta Cabin;

SR. NO.	ITEM	SPECIFICATIONS	NOS.
1	Executive Table	Godrej Model	02
2	Executive Chair	Godrej Model	02
3	Table	Godrej Model	04
4	Computer Table	Standard Size	01
5	Ordinary Chair	Godrej Model	04
6	Steel Almirah –	Godrej Model	02
7	Steel Almirah –	Godrej	01
8	Ceiling Fan – 1200 mm	Standard Brand	01
9	Computer, Printer & Accessories	Standard Brand: 1. Processor Intel i-5 2. 17" LCD Monitor 3. 4GB DDR-3 RAM 4. 1TB Hard Disk 5. DVD Writer 6. 6-in- Memory Card Reader 7. WLAD 802.11 b/g/n Bluetooth 8. 8 GB Pen drives – 02 No's 9. Keyboard & Mouse 10. HDMI in & out support 11. USB, ESATA Ports 12. Speaker 13. Anti-Virus Quick Heal Valid up to completion of works. 14. Spike Guard	01 no's each

SR. NO.	ITEM	SPECIFICATIONS	NOS.
		15. UPS Min. 30 Minutes backup 16. Internet modem with 3G Speeds unlimited Data. 17. A-3 Sized B/W Printer With Scanner.	
10	Office Stationery	Box Files – 10 No's Spring Files – 20 No's Plastic Folder Files- 24 No's A-4 & A3 Sized Copy Paper – 02 Rims Stationery Tray – 02 No's Punch (Big) – 01 No Punch (Small ) – 01 No Stapler (Big)- 01 No Stapler (Small) – 02 No 30 cm Scale – 03 No's Lead Pencils with box – 03 No's Erasers – 06 No's Permanent Markers – 06 No's Sketch Pens – 01 Box Whitener (Pen) – 03 No's Fevistick – 02 No's	

#### 18. Transportation

- i. The contractor will provide Two Air Conditioned Hardtop Vehicle viz. Xylo / Innova / Scorpio in good condition along with driver and the same will be kept at the disposal of the Engineer for the use by Client's, PC's & PMC's Engineers during the contract period as stipulated. This vehicle will be used for SCDCL works under the directives of the Engineer. The running of vehicle per month will be 3,000 km. The contractor will bear all expenses, connected with the operation and the maintenance of this vehicle, including driver's wages, overtime and other benefits, cost of the fuel, lubricant, repairs and maintenance, third party insurance, any other related expenses

etc. to the satisfaction of the Engineer. The vehicle record will be maintained in the form of log- book at site. The vehicle shall be replaced with a new vehicle during breakdown time, failing which the Client will hire the vehicle at the risk and cost of the contractor.

#### 19. Safety Guidelines

- i. Proper and correct lifting methods shall be adopted.
- ii. All lifting tools, tackles and wire ropes etc. shall be of tested quality for safe working loads. Wire ropes shall be of sound construction without any splaying.
- iii. It is mandatory for all jobs done at a height of 2.5 M and more to use fall arrestor type safety belts & safety nets.
- iv. While carrying out work in confined areas, proper ventilations and lighting arrangement should be made by the contractor. Adequate precautions shall be taken while the work is in progress to ensure that naked light, fire, welding or any other hot work is not in progress in the vicinity of the area where painting is being carried out.
- v. If the work is to be carried out at height, safety of the personnel is of utmost importance. Therefore, all necessary precautions must be taken by the contractor and he has to obtain work permit from authorized official of SMC/SCDCL for working at height before start the work.
- vi. In addition to the above, contractor has to adhere to the following safety checklist:

#### A. CIVIL WORKS

- i. During excavation, the excavated earth must be dumped at a safe distance from the edge of excavation. In no case, this shall be less than 1.5 meters from the top edge of the excavation.
- ii. Safe cross walkways are to be provided at distances not more than 30 meters along a continuous trenching for pipelines etc.
- iii. Hard hats (safety helmets), rubber boots, safety shoes, and hand gloves, etc. are required to be provided for supervising as well as other working personnel by the contractor.
- iv. Keep a watch on buried cables and underground systems. Ladders, gangways are to be provided at convenient places for carrying out required works. Ladders shall be firmly secured to ground, and rungs of the ladders shall be properly secured and safe.
- v. Install Barricading as per IS code with the marking "Solapur City Development Works".

#### B. ELECTRICAL WORKS

1. All temporary electrical connections should be got done to conform to statutory regulations and a certificate obtained from the authorities. The connection and the wiring to be maintained by competent and licensed supervisors and wiremen. As far as possible, the cables are to be safely buried to ensure free access to equipment and machineries movements.



2. Hard hats (safety helmets) made out of insulating material to be used by personnel working in 'live' areas like substations, etc.
3. Safety boots, necessary hand-gloves as required, shall be used.
4. '**Earthing**' of machineries and equipment shall be ensured. No open/ bare connections allowed. The arrangements should be checked periodically for damages to insulation and loose connections, etc. and rectified so that the wiring becomes non-hazardous.
5. The areas of working during nights shall be properly illuminated with floodlights and hand- Hard hats (safety helmets), safety belts, eye goggles, face shields, safety boots, hand- gloves, respirators, etc. as required/ directed shall be used.
6. Proper, correct and safe lifting methods shall be adopted
7. All lifting tools tackle and wires ropes etc. shall be of tested quality for safe working loads. Wire ropes shall be of sound construction without any splaying.
8. Checks to be exercised for broken wires and core proportion in the main body of the wire ropes to be rejected. Manufacturer's guidelines/ standards instructions are to be followed for using wire ropes and slings with broken wires. Experience and common sense is of immense help.
9. Usage of hoisting belts/ safety belts is must for personnel working at higher elevations.
10. Only safe gangways / walkways shall be used for movement of personnel. Short cuts shall be avoided.
11. Check connections to headman anchors before hoisting.
12. All live wires to be crossed during hoisting shall be made dead near the vicinity of the area during hoisting/ rigging.
13. Avoid keeping the loads supported by hoisting equipment for an unreasonable length of time.
14. Ropes, cables, and slings must be protected with pads or wooden blocks at sharp edges.
15. .lamps as per the demand of the job.
16. Danger signals and safety tags in the live areas shall be demonstrated properly. All connections to be switched off after the working hours.
17. Isolation switches and main switches shall be accessible easily. Necessary precautions should be taken while excavating Earthing pits.
18. All works shall be carried out in strict accordance to the norms, procedure and specifications issued and in Relevant Indian Standard specifications and code of Practices with up to date amendments and revisions, latest edition of National building code and National electric code. In addition, the installation shall comply in all respects with the requirements of Indian. Electricity Act 2003 and Indian Electricity Rule 1956 with up to date amendments and revisions and special requirements if any of the Maharashtra State Electricity Board or Chief Electrical Advisor to Government of Maharashtra cum Chief Electrical Inspector and his subordinate office.
19. The contractor shall make his own arrangements for supply of water and electricity at

his expense required for execution of work. The SCDCL shall neither make any such arrangements nor shall make any payments in this regard.

20. The contractor has to construct at his own cost his site office and store at site on a suitable place and location as permitted by SCDCL. The SCDCL shall not provide any place for storage of equipment's required for work. No amount shall be paid to the contractor in this regard.
21. Proper upkeep and maintenance and safety of store and stocks of materials brought at site shall be the sole responsibility of the contractor. The materials got damaged due to negligence of its up keeping at site or due to mishandling shall have to be replaced by the contractor at his own cost. On discovery of such damages the SCDCL shall recover the amount paid through the running bills to the contractor and shall only be reimbursed after the replacement of the same. The SCDCL shall also not be responsible for theft of materials from site and the contractor has to replace all such materials at his own cost. No compensation whatsoever shall be payable to the contractor on above grounds.
22. The contractor shall not be entitled to any compensation for any loss suffered by him on account of delay in commencement or execution for work whatever the cause of delay may be including delay arising out of other materials, supply of materials, transportation for any matter related with MSEDCL & Electrical Safety Department or any other reasons whatsoever, the SCDCL shall not be liable for any claim in respect thereof.
23. The contractor shall finalize the layout of work, physically at site, and get approved by MSEDCL. Before placing orders for material. Approval of above layout by MSEDCL shall be general and shall not absolve the contractor with responsibility of its correctness.
24. The contractor shall within specified period from the date of issue of work order shall prepare all relevant drawings to be submitted to the applicable office of Electrical Inspector Maharashtra Govt or any other competent office for approval. All required sanctions and approvals from the above offices shall have to be obtained by the contractor within the above stipulated period at his own cost.
25. Rate quoted shall be applicable for works at all height unless otherwise specified in the schedule of quantities.
26. The contractor shall submit the drawing in three sets to SCDCL for this work duly approved by the Office of the electrical Inspector Maharashtra govt. and MSEDCL. Within specified days from the date of work order. The approval of these drawing will be general and will not absolve the contractor of the Responsibility of the correctness of those drawings.
27. The contractor shall submit test reports of the equipment to be supplied and drawings for approval of the Engineer in Charge before supplying the equipment. The successful tenderer shall also submit the purchase bill of all items as required and directed at no cost.
28. The contractor shall have to arrange all free of cost facilities for the inspection, such as employ or material labour etc. and any fees payable to Government or any competent

- authority at his own cost. The contractor shall arrange to obtain all sanctions from the concerning office of MSEDCL and from the elect. inspector Govt. of Maharashtra at his own cost. Any fees in respect of above work paid by the contractor shall not be reimbursed or refunded by the SCDCL and no claim for compensation shall be entertained in this regard. Copy of all such sanctions have to be submitted to SCDCL.
29. The contractor has to arrange factory inspection of all major items as required by Engineer in Charge at the manufacturer's works before dispatch of material. Date of inspection should be informed 15 days in advance to SCDCL. The contractor has to get any equipment or complete installation checked and tested by any Government/ Semi Government/ Private authority such as CPRI, BHEL, NABL laboratory, Testing department of MSEDCL etc. at his own cost. He shall also provide free of cost all labour, material, equipment's etc. for the purpose of above testing. The contractor shall not be entitled for any compensation on this ground. If required by Engineer in Charge contractor will have to arrange for third party inspection of entire installation done by him and he will have to rectify / repair / replace any defects pointed out by inspection agency.
30. The consultant appointed by SCDCL is authorized for following:
- To visit the site from time to time to inspect the quality of work.
  - To accompany SCDCL officials for factory inspections of material if required.
31. The contractor shall be responsible for removal of all defects and shall make rectification in the work at his own cost if any at the time of handing over the installation to MSEDCL without any claim for compensation.
32. It shall be the duty of the contractor to arrange all clearances from Electrical Inspector Maharashtra Govt., to coordinate and peruse the officers of MSEDCL. for periodical inspections during the currency of contract and final inspection of the work and get the complete installation electrically charged. No extra payment shall be made to the contractor in above account.
33. The contractor at his own cost and efforts shall arrange periodical inspection of work by various officers of MSEDCL. during course of execution of work and any instruction issued by the officers of MSEDCL. shall be communicated to SCDCL in writing by the contractor and prior permission shall be taken from SCDCL before its compliance.
34. The contractor should note that any delay / on the part of MSEDCL on any account what so ever shall not be entertained as a reason for time extensions in case of delay in completion of the work covered under this entire contract. The tenderer should therefore be aware and should not that execution and timely completion of External Electrification work in full coordination with other development and construction works covered under the scope of contract shall be sole responsibility of successful tenderer.
35. The complete installation shall be guaranteed for 5 years of defects liability period after physical completion of work. The date of handing over the installation to MSEDCL by contractor shall be the date of completion of physical work.
36. The contractor has to quote his rates in strict accordance to the list of approved make of materials. The tenderer has to ensure before filling up the rates regarding their availability and period of delivery.

37. The contractor shall note that during the execution of works there is likelihood in change of layout, specification and change in quantities of items entered in the schedule of items for which the contractor has tendered his rates. The increase or decrease in the quantities of such items may be up to any extent and the tenderer shall not be entitled to any compensation for any loss suffered by him on account or procurement of additional quantities of such items due to such changes.
38. The contractor shall not be entitled to any compensation for any loss suffered by him on account of delay in commencement or execution of work whatever the cause of delay may be including delay arising out of other materials or any reasons whatever and the SCDCL shall not be liable for any claim in respect thereof.
39. All dismantled material to be deposited at MSEDCL store by the contractor without any extra cost.
40. The contractor shall if required arrange for temporary mobile / trolley mounted distribution substations of required capacity to give supply to the areas being fed from the existing pole mounted transformer / transformers being removed. This will be necessary at the places where new transformer / CSS are to be installed at the same place from where pole mounted existing transformer / transformers are being removed. No extra payment shall be made for the temporary mobile / trolley substations and associated temporary HT and LT cabling done for charging the same. The contractor shall be responsible for all necessary statutory permissions required for this purpose.
41. Successful Tenderer should have A-Class Electrical license issued by Maharashtra Licensing Board. The license must be submitted at the time of agreement.
42. The bidder shall ensure coordination among all concerned departments such as SCDCL, SMC, MSEDCL, BSNL, IMC etc. and all other government and non-government stakeholders.
43. The bidder shall bear the costs for testing of all materials that have been procured/ utilized for the completion of work.
44. The bidder to envisage and engage sufficient resources in accordance with the work fronts available to ensure timely completion of work in accordance with the conditions of the Contract.

C. GENERAL

1. Safety starts from the individual on the job. Experience and common sense shall be generously used. In case of any doubt regarding safety, Engineer-in-Charge can be consulted.
2. Proper communication and alertness on the job is to be ensured.
3. Manholes and openings for ducts etc. shall be kept properly covered.
4. Correct tools and tackles should be used for every work. Make shift tools and tackles will result in accidents.
5. Fire-fighting equipment shall be placed at designated locations and kept unobstructed.
6. Do not use loose clothing, neckties, and etc. while on the job.

7. Safety precautions recommended by the manufacturers/ vendors shall be strictly adhered to.
8. All machinery, tools and tackles shall be maintained properly, and clearly.
9. Encumbrances in Construction Area, including Trees and Utilities -
  - i. The contractor shall be responsible to coordinate with service provider / concerned authorities for cutting of trees, shifting of utilities and removal of encroachments etc. and making the site unencumbered from the project construction area required for completion of work. This will include initial and frequent follow-up meetings / actions / discussions with each involved service provider / concerned authorities. The contractor will not be entitled for any additional compensation for delay in cutting of trees, shifting of utilities and removal of encroachments by the service provider / concerned authorities. Payment for cutting of trees and shifting of utilities as required by the concerned department shall be made by the Client. The entire cut material will be property of the contractor and no cost of such material shall be recovered from the contractor which shall be appropriately considered by the contractor in his bid.
  - ii. Drawings scheduling the affected encumbrances such as trees and services like water pipes, sewers, oil pipelines, cables, gas ducts, electricity lines, accessories, telephone poles and OFC cables etc. included in the contract document shall be verified by the contractor for accuracy of scope.
  - iii. The Client will make payments to the respective service provider / authorities for cutting of trees and shifting of utilities, wherever required. The contractor will obtain necessary approval from such Authorities after payments by the Client and also in cases where payments are not required to be made for such shifting. The Client will also write to all concerned departments/ service provider organization for expediting and facilitating cutting of trees, shifting of utilities and removal of encroachment etc.
  - iv. Any services affected by the Works must be temporarily supported by the Contractor who must also take all measures reasonably required by the various bodies to protect their services and property during the progress of the Works. It shall be deemed to be part of the Contract and no extra payment shall be made for the same.
  - v. The Contractor may be required to carry out certain works for and on behalf of the various bodies and he shall also provide, with the prior approval of the Engineer, such assistance to the various bodies as may be authorized by the Engineer.
10. Supply of Colored Record Photographs and Videography  
The Contractor shall, at his own cost, arrange to take color photographs and Videos at various stages / facets (before and after) of the work including interesting and novel features of the work as directed by the SCDCL/SMC officials and supply two copies of color record photographs and CD/DVD mounted in the albums including negatives with specification and these shall be kept by Client.
11. Public Awareness / Information Display  
The Contractor shall, at his own cost, arrange to provide, erect and maintain necessary display boards/ banners etc as directed by SMC officials at selected points of project

site giving such information as considered necessary for public awareness/ information.

## 12. Completion Drawings

The contractor is required to submit the completion drawings (As built Drawings) for the work done by him. However, the completion drawings for works done and covered underground, it is essential to prepare the completion drawing as soon as the work is done and before backfilling.

The drawings have to be prepared in digital format in AUTO-CAD, it is therefore made mandatory that the completion drawings of the cross section of road with all utilities, Road Plan, Inspection Chambers, Rainwater Catch pit, L-section of road etc, shall be submitted along with the running account bills for all the works carried out during the period.

The completion drawing should provide adequate data to enable finding the exact location of the system in ground at a later date by any other new person. It should also provide the data related to material, class and size of the line, its depth in ground, Invert Levels and levels in the manholes. The details will be provided from Chainage -wise and the plan layout of the roads along with Cross section and L-section on the reference map should be updated and submitted along with the bill. Two hard copies of the drawings will also be submitted along with the softcopy.

## 13. Execution of work according to Time Schedule

- i. The Bidder shall include in his bid, a detailed construction programme of executing the project, describing broadly the technology and construction methodology major components of the project including traffic diversion plan, deployment of machinery, submission of drawings and design. The programme shall be supplemented with Master Control Network. The Client reserves the right to request for change in Master Control Network after discussions with the successful bidder. Mutually agreed Master Control Network shall form part of the Contract.
- ii. The Contractor has to start construction works in the fronts available at particular road site. This shall be planned in close consultation with the Engineer-In-Charge and in coordination with the concerned authorities / departments / local groups.
- iii. The Works shall be executed and performed in accordance with the Master Control Network (Work Programme) which shall clearly indicate the interlinking / interdependencies of all the works of the Contract.
- iv. The Programme shall be reviewed jointly by the Client/ Engineer and the Contractor, at least once in a month where-in the hold ups/delays, if any, in the progress of Works, with reference to the agreed Schedule shall be given Special Attention. Necessary modifications (updating / Revisions) of the Programme, within the overall Time for Completion, shall be carried out by mutual agreement between the Client/ Engineer and the Contractor.

## 14. Working Procedure

The Contractor shall be required to adopt a Working Procedure based on the following:

- i. Protection of properties along the project roads and their activities / operations such that these suffer minimum (if any) adverse effects as a result of construction activities.
- ii. Observe all local requirements related to work and traffic restrictions (for example, transportation of material during particular times of a day or week, use of manual labour / smaller vehicles for carriage of material to / from narrow lanes) as may be specified by SCDCL from time to time.
- iii. Avoid disruption of any public utility network and promptly restore the same in case of any unavoidable disruption at his own cost and time without causing any discomfort to people as well as businesses.
- iv. Provide for all temporary arrangements essential to allow normal operations / living conditions for people as well as businesses.

### 15. Coordination with other Authorities

Due to the peculiar nature and location of the project, and in view of the objective of proper laying of all utility services, simultaneous coordination will be needed with different authorities to avoid any hardships to the project. SCDCL reserves the right to require Contractor to schedule the order of performance of their Work in such a manner as will minimize interference with work of any of the parties involved. As shown in the table below, the contractors will need to work simultaneously.

Description of Work	Implementation Strategy
1. Roads widening / improvement and laying of Footpath, Central Divider, RCC Cable Duct, HDPE Pipe Ducts for OFC, Telecom Lines and Gas Pipeline, RCC Pipes for Storm Water Drainage and Chambers, including appurtenances signages, road markings and adjunct structures.	Removal of old road in stretches / phases and shifting of electric poles, laying of new CC Road with central divider and storm water drainage pipes and chambers, provide for crossing of utility pipes for future demand at regular intervals, laying pipes for OFC and Gas, construction of RCC Duct, construction of foot-path after laying of utility services.
2. Water supply network (transmission /distribution) including all appurtenances and structures – upto house connections	Laying of utility services network including structures and appurtenances in designated widths with additional excavation if any after excavation by Contractor 1 for road, proper finishing of chamber / manhole top levels after footpath construction by Contractor 1. New user-end connections, abandonment of old connections / pipes.
3. Sewerage pipes and manholes – Up to house connections	
4. Treated Sewage Effluent supply network including appurtenances and structures – Up to supply / discharge points.	

Power cables (HV / LV), Substations, Distribution Boxes / Feeder Pillars etc. up to house connections and Street-lighting.	Laying of HV/LV cables in RCC Ducts up to Distribution Boxes / Feeder Pillars, Installation of compact substations, street lighting poles installation. New user-end connections.
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16. Material Storage All materials shall be stored as per IS:4082.
17. Payment against Excess quantities of various items.
18. Before making payment of excess quantities as per rules, the Engineer/ Engineer in charge /Employer shall get himself satisfied regarding genuineness of the claim Responsibility of informing the excess quantities as per approval of Employer and also for correctness of claim to be submitted in future shall rest with Engineer, a auditor and divisional Accountant also. While submitting the proposal for approval, concerned authorities should consider the exact position of the revised estimates, if necessary due to this excess.

**Note:** Upward or Downward revision in Contract Price shall be made with estimate rates in Schedule –B based on measurement recorded for work executed as actual , after applying the percentage above or below as quoted by Contract in Financial Bid. provided however that such increase or decrease is upto 25 % of estimated quantities as per Schedule –B. \*Increase /\*decrease beyond 25% shall be paid or contractor shall give the rebate to Employer at Rate Analysis based on Schedule of Rates (SOR) of concerned circle of MJP SoR /State’s Public Works Department are available shall be applicable for determination of costs. In case of non-availability of rate in current SOR, rates shall be worked out and paid based on rate analysis supported with vendor quotations.

\*For the items where it is expressly mentioned in Specifications that variation in rate will not be applicable and wherever mentioned in BOQ that quantities will be measured and paid as actual , this Clause of variation in rate (the rate shall be paid at tender rate) will not be applicable for increase/ decrease in quantity.

While asking the contractor to execute such excess quantity, the concerned Chief Executive Officer /Engineer in charge should inform the Contractor in writing specifically that the payment in excess of quantities specified in the tender will be made after following concerned prescribed rules.

19. Supply of material by the contractor.
  - 19.1. The contractor should supply all the material mentioned in Scope of Work/BOQ. This shall be conforming to relevant IS & approved MJP/ Corporation/Council vendors. All types of pipes, valve and specials will be accepted only on providing manufacturer's certificate and satisfactory inspection by third party inspection agencies appointed by Council/ Corporation. The charges of the same shall be borne by the Contractor.
  - 19.2. Other material such as cement, for steel etc. shall be conforming to relevant IS. Testing charges for cement, steel shall be borne by the contractor.
  - 19.3. In case of item of supply of pipes, valves, specials etc., 40% amount of supplied item



will be paid to the contractor on receipt of material (after satisfactory third party inspection/Engineers approval), 60% amount will be released after lowering, laying, jointing and after satisfactory hydraulic testing.

- 19.4. The contractor shall provide, at the site of work, satisfactory storage for not less than one month's average consumption of works and shall keep the cement of storage and utilization of cement in the order of its arrival at the stores and the contractor shall maintain satisfactory records, which would at any time show the dates of receipt and proposed utilization of cement lying in the storage.
- 19.5. The Employer / Engineer shall at all the times have access to the stores and sites, method of storage, records and securities provided by the contractor. The contractor shall comply with instruction that will be given by Engineer, Engineer in charge of Corporation, in this behalf.

## **20. DAMAGES TO UNDER/ABOVE GROUND UTILITY**

During the course of excavation and laying of the pipe line utmost care of existing main, electrical and telephone cables and private water connections/sewage connections shall be taken. Any damage to existing main electrical and telephone cable and private water/ sewage connection, etc, occurs during the course of execution, same shall be restored at the cost of the contractor. In case the repairs are done by owner, the cost of such repair will be recovered from the contractor.

Rates for all type of materials are inclusive of GST and all taxes levied by Central Government, State Government or local bodies.

Rates for supply of specials and valves are inclusive of excise duty (Central), GST, Third party inspection charges, storage charges, overhead charges and transportation of materials up to site and stacking. Rates mentioned in the tender are exclusive of all Central Govt, State Govt. and Local taxes, duties and cess etc.

21. Though the contractor is required to do refilling before hydraulic testing to avoid traffic hurdle, no payment for refilling of the trenches of pipe line shall be payable till satisfactory hydraulic testing is given. Re-excavation required if any during testing shall be done by contractor at his own cost.
22. The works of cross connections to existing lines are to be arranged in such a way as no major shutdowns are required to be taken and work should be completed within minimum period of time, without interrupting the major water supply in the area.
23. Considering the diversity in the project all rights shall vest in the CEO, SCDC to grant relaxation in technical eligibility and other tender conditions, as per actual requirements.
24. All conditions of Contract shall be as per शासन निर्णय, क्रमांक : सीएटी २०१७/प्र क्र ८ /इमा-२ and Govt. Circular No. Sankirna-2017/C.R.121(Part-II)/Building-2

## **PRE-QUALIFICATION FORMS**

## **Annexure A- Letter for Qualification Bid**

[To be printed on the Bidder's letterhead and signed by the Authorised Signatory]

Ref. No. [•]

To,  
**The Chief Executive Officer,**  
**Solapur City Development Corporation Limited (SCDCL),**  
New Planning Office,  
Near Milk Dairy, Saat Rasta,  
Solapur, 413003  
Maharashtra, India  
Tel: -0217-2740300, Fax: -0217-2740306  
E-mail: - solapurcitydcl@gmail.com

Date: dd/mm/2018

Subject: Qualification Proposal for Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/footpath/junction/related utilities on project sites in Solapur City under Smart Cities Mission.

Dear Sir/Madam,

In response to the Tender No. 2018-19/09 dated \_\_\_\_\_ ("RFP") for Selection of the Contractor for Procurement, Construction & Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on the Project Sites in Solapur City Development Corporation Limited , as a Proprietor/ Partner/ Director of \_\_\_\_\_, I/We, being duly authorised to represent and act on behalf of \_\_\_\_\_ (hereinafter referred to as the "**Bidder**"), and having reviewed and fully understood all of the qualification requirements and information provided, the undersigned hereby expresses its interest and applies for the qualification and bidding for undertaking "**Appointment of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites in Solapur City under Smart Cities Mission.**". We are enclosing our unconditional and unqualified Bid, in conformity with the terms of the RFP, and furnishing the details as per the requirements of the Bidding Document, for your kind evaluation.

The undersigned hereby also declares that the statements made and the information provided in the Bid is complete, true and correct in every detail.

We confirm that the application is valid for a period of [•] days from the due date of submission of application and is unconditional.

We hereby also confirm the following:

1. The Bid is being submitted by M/s[•].

2. We have examined in detail and have understood the terms and conditions stipulated in the RFP issued by SCDCL and in any subsequent communication sent by SCDCL.
3. We agree and undertake to abide by all these terms and conditions provided herein. Our Bid is consistent with all the requirements of submission as stated in the RFP or in any of the subsequent communications from SCDCL.
4. The information submitted in our Bid is complete, and is strictly as per the requirements stipulated in the RFP, and is true and correct to the best of our knowledge and understanding, if any discrepancies are observed by the bidders in the Tender herein, such discrepancies need to be brought to the attention to SCDCL forthwith as per the provisions herein provided.
5. We confirm that we have studied the provisions of the relevant Applicable Laws required to enable us to prepare and submit this Bid for undertaking the Project, in the event that we are selected as the Selected Bidder.
6. We certify that in the last three years, we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitration tribunal or a judicial authority or judicial pronouncement or arbitration award, nor have been expelled from any project or contract by any public authority nor have had any contract terminated by any public authority for breach on our part, nor have we been black-listed by any public authority or state owned or controlled entity, as a result of default of any kind on our part.
7. I/ We declare that:
  - a. I/ We have examined and have no reservations to the Bidding Documents, including any clarification, amendment, addendum or corrigendum issued by SCDCL; and
  - b. I/ We do not have any Conflict of Interest in accordance with the RFP; and
  - c. I/We have not directly or indirectly or through an agent engaged or indulged in any Corrupt Practice, Fraudulent Practice, Coercive Practice, Undesirable Practice or Restrictive Practice, in respect of any tender or request for Bid issued by or any agreement entered into with SCDCL or any Public Entity; and
  - d. I/We hereby certify that we have taken steps to ensure that in conformity with the provisions of Section 5 of the RFP, no person acting for us or on our behalf has engaged or will engage in any Corrupt Practice, Fraudulent Practice, Coercive Practice, Undesirable Practice or Restrictive Practice; and
  - e. the undertakings given by us along with the Bid in response to the RFP for the Project are true and correct as on the date of making the Bid and are also true and correct as on the Bid Submission Date and I/We shall continue to abide by them.
8. I/We state that any terms not defined in the present letter shall have the meanings ascribed to in the RFP.
9. I/ We hereby certify that we have taken steps to ensure that in conformity with the

provisions of the RFP, no person acting for us or on our behalf has engaged or will engage in any Corrupt Practice, Fraudulent Practice, Coercive Practice, Undesirable Practice or Restrictive Practice.

10. I/ We understand that you may cancel the Bidding Process at any time and that you are neither bound to accept any Bid that you may receive nor to invite the Bidders to Bid for the Project, without incurring any liability to the Bidders;
11. I/ We further certify that in regard to matters relating to security and integrity of India, we, have not been convicted by any court of Law or indicted or adverse orders passed by the regulatory authority which could cast a doubt on our ability to undertake the Project or which relates to a grave offence that outrages the moral sense of community.
12. I/ We further certify that in regard to matters relating to security and integrity of India, we have not been charge-sheeted by any Public Entity or convicted by the Court of Law.
13. I/ We further certify that no investigation by a regulatory authority is pending either against us or against our Associates or against our CEO or any of our Directors/ Partners (in case the Bidder is a Partnership)/ Managers/ employees.
14. I/ We hereby irrevocably waive any right which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by SCDCL in connection with the selection of the Bidders, or in connection with the Bidding Process itself, in respect of the abovementioned Project and the terms and implementation thereof.
15. I/ We agree not to seek any changes in the aforesaid draft and agree to abide by the same.
16. I/We have studied all the Bidding Documents carefully and also have conducted all necessary survey activities of the Project Site, to satisfy our understanding of the Project. We understand that except to the extent as expressly set forth in the Agreement, we shall have no claim, right or title arising out of any documents or information provided to us by SCDCL or in respect of any matter arising out of or concerning or relating to the Bidding Process including the award of Authorization.
17. The percentage quoted in the Financial Bid has been quoted by me/us after taking into consideration all the terms and conditions stated in the RFP, Agreement, our own estimates of costs and after a careful assessment of the identified locations of the proposed Project, development guidelines, goals and objectives of the Project and all the conditions that may affect the Bid.
18. I agree and understand that the Bid is subject to the provisions of the Bidding Documents. In no case, I/We shall have any claim or right of whatsoever nature if the Project is not awarded to me/us or our Bid is not opened or rejected.
19. I/We agree and undertake to abide by all the terms and conditions of the RFP which *inter-alia* include payment of Tender Fee, EMD or Performance Bank Guarantee or Security Deposit, furnishing of the Performance Bank Guarantee to SCDCL in the manner provided in respect thereof in the RFP and Agreement.

20. I/ We confirm that all the terms and conditions of the Bid are firm and valid for acceptance for a period of [•]days from the Bid Submission Date.
21. I/We agree and undertake to abide by all the terms and conditions of the RFP. In witness, thereof, I/ We submit this Bid under and in accordance with the terms of the RFP.

Thanking you,

Yours sincerely,

**For and on behalf of:** (name of the Bidder and the Company Seal)

**Signature:** (Authorized Representative & Signatory)

**Name of the Person:**[•]

**Designation:**[•]

**Address:**[•]

**Telephone & Fax:**[•]

**E-mail address:** [•]

## **Annexure B- Letter of Undertaking**

*[To be printed on the Bidder's letterhead and signed by the Authorised Signatory]*

Ref. No. [•]

Date: dd/mm/2018

To,  
**The Chief Executive Officer,**  
**Solapur City Development Corporation Limited (SCDCL),**  
New Planning Office,  
Near Milk Dairy, Saat Rasta,  
Solapur, 413003  
Maharashtra, India  
Tel: -0217-2740300, Fax: -0217-2740306  
E-mail: - solapurcitydcl@gmail.com

**Subject: Undertaking that the company is not blacklisted as of the Bid Submission Date**

Dear Sir/Madam,

In response to the Tender No. 2018-19.05 dated 24-08-2018 (“RFP”) for “**Appointment of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites in Solapur City under Smart Cities Mission.**”, as a Proprietor/ Partner/ Director of [•], I/We state that any terms not defined in this letter shall have the same meanings ascribed to them in the RFP.

We hereby undertake that as on the Bid Submission Date, we are not blacklisted by the Solapur Municipal Corporation (SMC), Central, State Governments in India on any ground including in Corrupt Practice, Fraudulent Practice, Coercive Practice, Undesirable Practice or Restrictive Practice for the last three (3) years preceding the Bid Submission Date.

We further undertake that neither our firm M/s. [•] or its Associates, nor any of its directors/constituent partners have abandoned any work nor any contract awarded to us for such works have been terminated for reasons attributed to us, prior to the Bid Submission Date.

We further certify that neither our firm M/s [●] nor any of its directors/ constituent partners have been debarred by State/Central/authority/any other statutory body for any work or from bidding.

We hereby certify and confirm that in the preparation and submission of this Bid, we have not acted in concert or in collusion with any other Bidder or other person(s) and also not done any act, deed or thing which is or could be regarded as anti-competitive or illegal.

We further confirm that we have not offered nor paid nor will offer nor pay, directly or indirectly, any illegal gratification, in cash or kind, to any person or agency in connection with the instant Bid.

We hereby authorize(s) and request(s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested to verify this statement or regarding my (our) competence and general reputation.

We understand and agrees that further qualifying information may be requested, and agrees to furnish any such information at the request of the Client.

For and on behalf of: (name of the Bidder and the Company Seal)

Signature: (Authorized Representative & Signatory)

Name of the Person : [•]

Designation : [•]

Business Address : [•]

Telephone & Fax : [•]

E-mail address : [•]

Date : [•]

Place : [•]



**Annexure C- Letter of Transmittal/Confirmation to be provided by the Bidder**

*[To be printed on the Bidder's letterhead and signed by the Authorised Signatory]*

Ref. No.[.]

Date: dd/mm/2018

To,  
**The Chief Executive Officer,**  
**Solapur City Development Corporation Limited (SCDCL),**  
New Planning Office,  
Near Milk Dairy, Saat Rasta,  
Solapur, 413003  
Maharashtra, India  
Tel: -0217-2740300, Fax: -0217-2740306  
E-mail: - solapurcitydcl@gmail.com

Dear Sir/Madam,

Subject: Letter of Transmittal Regarding Tender No. 2018-19/09 dated 24/08/2018, for **"Appointment of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites in Solapur City under Smart Cities Mission"**..

In response to the Tender No. 2018-19/09 dated 24/08/2018 ("RFP") for **Appointment of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project**, as a Proprietor/ Partner/ Director of [.] I/We state that any terms not defined in this letter shall have the same meanings ascribed to them in the RFP.

I/We hereby state and submit that I/ We have read the RFP and the Bidding Documents for the above captioned matter.

I/We have also got myself/ ourselves acquainted with all conditions of contract/ general conditions of the Agreement/ scope of work/ mode of measurement/ detailed specification for Contractor for **Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide and total length 10.8Km road/ street/ footpath/junction/related utilities on project sites in Solapur City under Smart Cities Mission** / plans etc. thereby comprising of the entire Bidding Documents of the above captioned matter.

The percentage quoted by me/us are after taking into consideration all facts and figures given in the Bidding Document. Therefore,

I/We shall not claim anything after opening of the Bidding Documents on the ground of ignorance of contents of Bidding Documents.

I/we am/are authorised to sign the declaration on behalf of my Firm/ Partnership/ Company etc.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, my/ our Earnest Money Deposit may be forfeited in full and my Tender shall be cancelled.

Yours sincerely,

**For and on behalf of:** (name of the Bidder and the Company Seal)

**Signature:** (Authorized Representative & Signatory)

**Name of the Person** :[•]

**Designation** :[•]

**Business Address** :[•]

**Telephone & Fax** :[•]

**E-mail address** :[•]

**Date** :[•]

**Place** : [•]

## **Appendix 1. List of Documents to be submitted along with Qualification Bid**

### General Instructions on Preparation of the Qualification Bidding Proposal

- i. Bidders have to submit a structured and organized Bid as per the format prescribed in the RFP. The document submitted must be searchable and well indexed without any handwritten material.
- ii. List of documents to be submitted with the Qualification Bid Proposal:

No.	Document Required	Submitted (Y / N) If applicable	Documentary Proof (Page No.)
	Annexure A: Letter for Qualification Bid		
	Annexure B: Letter of Undertaking		
	Annexure C: Letter of transmittal/confirmation to be provided by the Bidder		
	Other Documents required to be submitted with the Financial Bid: Appendix 2: Format of Financial Bid Appendix 3: Financial Proposal Declaration Appendix 4: Power of attorney for signing the Bid Appendix 4A: Qualification Requirements Appendix 4C: Power of attorney for signing the Bid for Lead Member of JV (In case the Bidder is a JV) Appendix 4B: Joint Bidding Agreement (In case the Bidder is a JV) Appendix 5: Performance Bank Guarantee		
	Bid Qualification Documentation: Appendix 6: PQ_1 Years of operation Appendix 7: PQ_2 Financial Strength - Turnover Appendix 8: PQ_3 Financial Strength – Net worth Appendix 9: PQ_4 Relevant experience – similar projects and services Appendix 10: Declaration of Compliance Appendix 11: Details of any Past or Pending Litigation or Arbitration Proceedings, References, Claims or Demands, as the case may be		

**Although, the Bidders shall submit the documentation specified in Appendix 2, Appendix 3, Appendix 4/4C, Appendix 5 along with their respective Financial Bids in the Second Part, albeit they are supposed to submit the check-list in the First Part along with their Qualification Bids.**

## Appendix 2. Format of Financial Bid

Date: dd/mm/2018

To,  
**The Chief Executive Officer,**  
**Solapur City Development Corporation Limited (SCDCL),**  
New Planning Office,  
Near Milk Dairy, Saat Rasta,  
Solapur, 413003  
Maharashtra, India  
Tel: -0217-2740300, Fax: -0217-2740306  
E-mail: - solapurcitydcl@gmail.com

Dear Sir/Madam,

I have carefully gone through the terms and conditions contained in the RFP and Bidding Document for **“Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project”**..Bearing Tender No. 2018-19/09 dated 24/08/2018.].

I/We further declare the format for schedule for payment of Bid Percentageas under:

#	Description	Mode
1.	<b>Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.818Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project.</b>	B1

I/We hereby confirm the following:

- this Financial Bid is being submitted by M/s. *[Name of the bidder]* in accordance with the conditions stipulated in the RFP;
- I/We have examined in detail and understand and agree to abide by all the terms and conditions stipulated in the RFP and Bidding Documents issued by SCDCL, as amended, and in any subsequent communication sent by SCDCL. Our Financial Bid is consistent with all requirements of submission stated in the RFP and in in any subsequent communication sent by SCDCL;

- I/We are solely responsible for any errors or omissions in our Financial Bid.

I/We also agree to execute the work as per the specifications, terms and conditions of RFP.

I/We further certify that I am competent officer in my company to make this declaration.

Yours sincerely,

---

Signature of Authorized Signatory (with official seal)

Name : [•]

Designation : [•]

Address : [•]

Telephone& Fax : [•]

E-mail address : [•]

### **Appendix 3. Financial Proposal Declaration**

*[To be printed on the Bidder's letter head and signed by the authorized signatory]*

Date: dd/mm/2018

To,  
**The Chief Executive Officer,**  
**Solapur City Development Corporation Limited (SCDCL),**  
New Planning Office,  
Near Milk Dairy, Saat Rasta,  
Solapur, 413003  
Maharashtra, India  
Tel: -0217-2740300, Fax: -0217-2740306  
E-mail: - solapurcitydcl@gmail.com

**Sub:** Selection of Service Provider for the Project for “**Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.818Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project**”..

**Ref :** Tender No: <2018-19/09 dated 24/08/2018 >

Dear Sir/ Madam,

We, the undersigned Bidder, having read and examined in detail all the Bidding Documents in respect of the RFP for “**Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project**” bearing Tender No. 2018-19/09 dated 24/08/2018 (“RFP”) and do hereby propose to provide services as specified in the Bidding Documents referred above.

#### 1. PRICE AND VALIDITY

- All the prices mentioned in our Bid are in accordance with the terms as specified in the Bidding Documents. All the prices and other terms and conditions of this Bid are valid for entire contract duration.
- We hereby confirm that our Bid Percentage considered is exclusive of GST, as specified in the Bidding Document formats.
- We have studied the provisions relating to Indian income tax and hereby declare that if any income tax, surcharge on income tax, professional and any other corporate tax is altered under the Law, we shall pay the same.

#### 2. DEVIATIONS

We declare that all the Services shall be performed strictly in accordance with the Bidding Documents and there are no deviations except for those mentioned in the bid

qualifications envelope, irrespective of whatever has been stated to the contrary anywhere else in our Bid.

Further we agree that additional conditions, if any, found in our Bidding Documents, other than those stated in the deviation schedule in bid qualifications, shall not be given effect to.

3. QUALIFYING DATA

We confirm having submitted the information as required by you in your Instruction to Bidders. In case you require any other further information/documentary proof in this regard before evaluation of our Bid, we agree to furnish the same in time to your satisfaction.

4. Financial Bid

We declare that our Financial Bid is for the entire scope of the work as specified in the Bidding Document. The Bid Percentage at which the Agreement is awarded shall hold good for entire term, tenure and tenor of the Agreement.

5. PERFORMANCE BANK GUARANTEE

We hereby declare that in case the Project is awarded to us, we shall submit the Performance Bank Guarantee in the form prescribed in the Bidding Document.

We hereby declare that our Bid is made in good faith, without collusion or fraud and the information contained in the Bid is true and correct to the best of our knowledge and belief.

We understand that our Tender is binding on us and that you are not bound to accept a Bid you receive. We confirm that no deviations are attached here with this financial offer.

Thanking you,

Yours faithfully,

(Signature & Seal of the Authorized Signatory)

Name : [•]

Designation : [•]

Seal : [•]

Date : [•]

Place : [•]

Business Address : [•]



## **Appendix 4. Power of Attorney for Signing the Bid**

*[To be printed on Non-Judicial Stamp Paper of INR 500 and duly attested by notary public]  
[Please Note Stamp Duty payable for power of attorney in the State of Maharashtra as per the  
Maharashtra Stamp Act of 1958 is INR 500]*

Bid No: SC[•]/2018

KNOW ALL MEN BY THESE PRESENTS that the undersigned [name], [title] of [name of the Company] (hereinafter referred to as the “**Company**”), is lawfully authorised to represent and act on behalf of the Company, whose registered address is [Company’s address], and does hereby appoint [name], [title], of [firm] of \_\_\_\_, whose signature appears below, to be the true and lawful attorney, and authorised the said attorney to sign the bids, conduct negotiations, sign an Agreement and execute all the necessary matters related thereto, and to do all such acts, deeds, things and matters in the name and on behalf of the Company in connection with the execution, completion of the Agreement for the Company (as Contractor) for “**Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.818Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project**” bearing Tender No. 2018-19/09 dated 24/08/2018.

We hereby agree to ratify all acts, deeds, and things lawfully done by our said attorney pursuant to this power of attorney and that all acts, deeds and things done by our aforesaid attorney shall and always be deemed to have been done by us.

Tender No.: 2018-19/09 dated 24/08/2018

OFFICIAL SEAL AND SIGNATURE OF THE COMPANY:

\_\_\_\_\_

Printed Name of the Legal Representative: [•]

Signature of the Legal Representative:

\_\_\_\_\_

Printed Name of the Attorney:

\_\_\_\_\_

In the capacity of:

ert title or other appropriate designation]

[Ins

Signature of the Attorney:

\_\_\_\_\_

Company's seal:

\_\_\_\_\_

Printed Name of the Witness:

[•]

In the capacity of:

ert title or other appropriate designation]

[Ins

Signature of the Witness:

\_\_\_\_\_

Address of Witness: [•]

Dated on [•] day of [•], 2018[date of signing]

*[Note: The Bidder should include such power of attorney in its Bid. Original should be couriered to the Client*

- *The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the Applicable Law.*
- *Also, wherever required, the executant(s) should submit for verification the extract of the charter documents and documents such as a board or shareholder's resolution/ power of attorney in favour of the person executing this power of attorney for the delegation of power hereunder on behalf of the executant.*

- *For a power of attorney executed and issued overseas, the document will also have to be legalised by the Indian embassy and notarised in the jurisdiction where the power of attorney is being issued. However, the power of attorney provided by executants from countries that have signed the Hague Legalisation Convention 1961 are not required to be legalised by the Indian embassy if it carries a conforming apostille certificate.*

## **Appendix 4A. Qualifications Requirements**

### 1. List of Qualification Requirements (Should be read in conjunction with Section 4.1.2)

#	Qualification Evaluation Criteria	Qualification Evaluation parameter	Documentary Proof	Reference Format in Annexure
P Q _1	Years of operation	The Bidder must have been operational for at least 5 (five) years preceding from the Bid Submission Date.	<p>Certificate of Incorporation / Registration under Companies Act, 1956 / companies Act 2013</p> <p>Memorandum and Articles of Association</p> <p>Certificate as per Shops &amp; Establishments Act</p> <p>Partnership Deed/ LL.P. Agreement (if applicable)</p> <p>Valid registration of Bidder in appropriate class or equivalent to this tender through centralized registration of state PWD/ MES/ Railways/ CPWD/ NHAI/ Urban Local/ State PHED/ MJP Body (only 'A' class)</p> <p>Registration No. issued by state PWD/ MES/ Railways/ CPWD/ NHAI/ Urban Local Body/ State PHED/ MJP (only 'A' class)</p>	Appendix - 6
P Q _2	Financial Strength– Turnover	The Bidder shall have an average annual financial turnover of equal to or more than [INR 43.5 Cr.] in the last 3 financial years (FY 2015-16, 2016-17, 2017-18) (being 75% of the estimated project cost specified in the BOQ).	Certificate from statutory auditor/ company secretary, clearly specifying the annual turnover of the Bidder	Appendix - 7

P Q _3	Financial Strength – Net worth	The Bidder shall have a minimum Net Worth of INR [30.00 Cr.] at the close of the preceding financial year.	Certificate from the statutory auditor/ company secretary, clearly specifying the net worth of the Bidder	Appendix - 8
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## **Appendix 4B. Joint Bidding Agreement (In case the Bidder is a JV)**

*[To be executed on Non-Judicial Stamp Paper, having stamp value Rs. 500 as per the Maharashtra Stamp Act, 1958]*

THIS JOINT BIDDING AGREEMENT is entered into at ..... on this the ..... day of ..... 20.....

AMONGST

1. (Limited, a company incorporated under the Companies Act, 1956 or 2013} and having its registered office at (hereinafter referred to as the “First Part” which expression shall, unless repugnant to the context include its successors and permitted assigns)

AND

2. (Limited, a company incorporated under the Companies Act, 1956 or 2013} and having its registered office at (hereinafter referred to as the “Second Part” which expression shall, unless repugnant to the context include its successors and permitted assigns)

The above mentioned parties of the FIRST, and SECOND PART are collectively referred to as the “Parties” and each is individually referred to as a “Party”

WHEREAS,

a) [Solapur City Development Corporation Limited, represented by [its CEO], having its principal office at [New Planning Office, Near Milk Dairy, Saat Rasta, Solapur, 413003 Maharashtra, India] (hereinafter referred to as the “SCDCL”, which expression shall, unless repugnant to the context or meaning thereof, include its successors and assigns); has invited bids (“Bids”) by its Tender document \_\_\_ dated (“Tender”) for pre-qualification and short-listing of Bidders for **Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project.**

b) The Parties are interested in jointly bidding for the Project as members of a JV and in accordance with the terms and conditions of the Tender document and other bid documents in respect of the Project, and

c) It is a necessary condition under the Tender document that the members of the JV shall enter into a Joint Bidding Agreement and furnish a copy thereof with the Bid.

NOW IT IS HEREBY AGREED as follows:

1. Definitions and Interpretations

In this Agreement, the capitalized terms shall, unless the context otherwise requires, have the meaning ascribed thereto under the Tender.

## 2. JV

2.1 The Parties do hereby irrevocably constitute a JV (the “**JV**”) for the purposes of jointly participating in the Bidding Process for the Project.

2.2 The Parties hereby undertake to participate in the Bidding Process only through this JV and not individually and/ or through any other JV constituted for this Project, either directly or indirectly or through any of their Associates.

## 3. Role of the Parties

The Parties hereby undertake to perform the roles and responsibilities as described below:

a) Party of the First Part shall be the Lead member of the JV and shall have the power of attorney from all Parties for conducting all business for and on behalf of the JV during the Bidding Process and until the Appointed Date under the Contract when all the obligations of the SPY shall become effective;

b) Party of the Second Part shall be {the \_\_\_\_\_ Member of the JV};

## 4. Joint and Several Liability

The Parties do hereby undertake to be jointly and severally responsible for all obligations and liabilities relating to the Project and in accordance with the terms of the Tender document and the Contract, till such time as the Financial Close for the Project is achieved under and in accordance with the Contract.

## 5. Representation of the Parties

Each Party represents to the other Parties as of the date of this Agreement that:

(a) Such Party is duly organized, validly existing and in good standing under the laws of its incorporation and has all requisite power and authority to enter into this Agreement;

(b) The execution, delivery and performance by such Party of this Agreement has been authorized by all necessary and appropriate corporate or governmental action and a copy of the extract of the charter documents and board resolution/ power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the JV Member is annexed to this Agreement, and will not, to the best of its knowledge:

I. Require any consent or approval not already obtained;

II. violate any Applicable Law presently in effect and having applicability to it;

III. violate the memorandum and articles of association, by-laws or other applicable organizational documents thereof;

IV. violate any clearance, permit, concession, grant, license or other governmental authorization, approval, judgement, order or decree or any mortgage agreement, indenture or any other instrument to which such Party is a party or by which such Party or any of its properties or assets are bound or that is otherwise applicable to such Party; or

V. create or impose any liens, mortgages, pledges, claims, security interests, charges or Encumbrances or obligations to create a lien, charge, pledge, security interest, encumbrances or mortgage in or on the property of such Party, except for encumbrances that would not, individually or in the aggregate, have a material adverse effect on the financial condition or prospects or business of such Party so as to prevent such Party from fulfilling its obligations under this Agreement;

(c) this Agreement is the legal and binding obligation of such Party, enforceable in accordance with its terms against it; and

(d) there is no litigation pending or, to the best of such Party's knowledge, threatened to which it or any of its Affiliates is a party that presently affects' or which would have a material adverse effect on the financial condition or prospects or business of such Party in the fulfilment of its obligations under this Agreement.

## 6. Termination

This Agreement shall be effective from the date hereof and shall continue in full force and effect until the Financial Close of the Project is achieved under and in accordance with the Agreement, in case the Project is awarded to the JV. However, in case the JV is either not prequalified for the Project or does not get selected for award of the Project, the Agreement will stand terminated in case the Bidder is not pre-qualified or upon return of the Earnest money deposit by the SCDCL to the Bidder, as the case maybe.

## 7. Miscellaneous

7.1 This Joint Bidding Agreement shall be governed by laws of (India).

7.2 The Parties acknowledge and accept that this Agreement shall not be amended by the Parties without the prior written consent of SCDCL.

**For [*Lead Member*]**

**Authorised Signatory**

**For [*JV Member*]**

**Authorised Signatory**



## **Appendix 4C. Power of Attorney for Signing the Bid for Lead Member of JV**

*[To be printed on Non-Judicial Stamp Paper of INR 500] [Please Note Stamp Duty payable for Power of Attorney in the State of Maharashtra as per the Maharashtra Stamp Act of 1958 is INR 500]*

Whereas the SCDCL has invited applications from interested parties for the “Selection of Contractor for **Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project**”.

Whereas [•] and [•], (Collectively “**JV**”) being Members of the JV are interested in bidding for the Project in accordance with the terms and conditions of the Request for Proposal (RFP document) and other connected documents in respect of the Project, and Whereas, it is necessary for the Members of the JV to designate one of them as the Lead Member with all necessary power and authority to do for and on behalf of the JV, all acts, deeds and things as may be necessary in connection with the JV’s bid for the Project and its execution.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS

We, [•] having our Registered office at [•],

M/s [•] having our Registered office at [•],

(hereinafter collectively referred to as the “**Principals**”) do hereby irrevocably designate, nominate, constitute, appoint and authorize M/s. [•] having its registered office at [•], being one of the Members of the JV, as the Lead Member and true and lawful attorney of the JV (hereinafter referred to as the “**Attorney**”). We hereby irrevocably authorize the Attorney (with power to sub-delegate) to conduct all business for and on behalf of the JV and any one of us during the bidding process and, in the event the JV is awarded the contract, during the execution of the Project and in this regard, to do on our behalf and on behalf of the JV, all or any of such acts, deeds or things as are necessary or required or incidental to the pre-qualification of the JV and submission of its bid for the Project, including but not limited to signing and submission of all applications, bids and other documents and writings, participate in Bidders and other conferences, respond to queries, submit information/ documents, sign and execute contracts and undertakings consequent to acceptance of the bid of the JV and generally to represent the JV in all its dealings with the SCDCL, and/ or any other Government Agency or any person, in all matters in connection with or relating to or arising out of the JV’s bid for the Project and/ or upon award thereof till the definitive Contract/ Agreement is entered into with the SCDCL.

AND hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done

by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us/ JV.

IN WITNESS WHEREOF WE THE PRINCIPALS ABOVE NAMED HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS [•] DAY OF [•], 2018

For .....  
(Signature)

.....  
(Name & Title)

For .....  
(Signature)

.....  
(Name & Title)

Witnesses:

- 1.
- 2.

(Executants)

*(To be executed by all the Members of the JV)*

Note:

1. *The Bidder should include such power of attorney in its Bid. Original should be couriered to the Client.*
2. *The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the Applicable Law.*
3. *Also, wherever required, the executant(s) should submit for verification the extract of the charter documents and documents such as a board or shareholder's resolution/ power of attorney in favour of the person executing this power of attorney for the delegation of power hereunder on behalf of the executant.*
4. *For a power of attorney executed and issued overseas, the document will also have to be legalised by the Indian embassy and notarised in the jurisdiction where the power of attorney is being issued. However, the power of attorney provided by executants from countries that have signed the Hague Legalisation Convention 1961 are not required to be legalised by the Indian embassy if it carries a conforming apostille certificate.*

## Appendix 5. Performance Bank Guarantee

**Note:**

- This is to be provided by the Selected Bidder before signing of the Agreement for the Project. This is to be provided by Selected Bidder within 7 days after award of individual work order
- *[To be printed on Non-Judicial Stamp Paper of INR 500 as per the provisions of the Maharashtra Stamp Act, 1958 and duly attested by notary public]*

IN CONSIDERATION OF ..... Through .....Solapur City Development Corporation Limited (SCDCL) for **Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project**” (hereinafter referred to as the “said Project”) on the terms and conditions of the Agreement dated the .....day of ..... 2018 executed between SCDCL on the one part and the Name of the Company (Company) on the other part (hereinafter referred to as the “**Agreement**”) and on the terms and conditions specified in the Agreement, Form of Offer and Form of acceptance of Offer, true and complete copies of the offer submitted by the Company, the said Acceptance of Offer and the said Agreement are annexed hereto. The Company has agreed to furnish SCDCL in Guarantee of the Nationalized Bank for the sum of Rs ..... (Agreement in Words and Figures) only which shall be the security deposit for the due performance of the terms covenants and conditions of the said Agreement. We..... Bank (Bank/Guarantor)registered in India under the [.] Act and having one of our local head office at....., do hereby guarantee to SCDCL in ..... department.

- i. Due performance and observances by the Company of the terms covenants and conditions on the part of the Company contained in the said Agreement, AND
- ii. Due and punctual payment by the Company to SCDCL of all sum of money, losses, damages, costs, charges, penalties and expenses that may become due or payable to SCDCL by or from the Company, by reason of or in consequence of, any breach, non-performance or default on the part of the Company, of the terms covenants and conditions under or in respect of the said Agreement.

AND FOR THE consideration aforesaid, we do hereby undertake to pay to SCDCL on demand without delay demur the said sum of INR ...../- (Indian Rupees ..... only) together with interest thereon at the rate prescribed under ..... from the date of demand till payment or such lesser sum, as may be demanded by SCDCL from us as and by way of indemnity on account of any loss or damage caused to or suffered by SCDCL by reason of any breach, non-performance or default by the Company of the terms, covenants and conditions contained in the said Agreement or in the due and punctual payment of the moneys payable by the Company to SCDCL thereunder and notwithstanding any dispute or disputes raised by the Company in any suit or proceeding filed before the Court relating thereto our liability hereunder being absolute and unequivocal and irrevocable AND WE do hereby agree that –

- a) The guarantee herein contained shall remain in full force and effect during the subsistence of the said Agreement and that the same will continue to be enforceable till all the claims of SCDCL are fully paid under or by virtue of the said Agreement and its claims satisfied or discharged and till SCDCL certifies that the terms and conditions of the said Agreement have fully and properly carried out by the Company.
  - b) We shall not be discharged or released from liability under this guarantee by reason of
    - i. any change in the constitution of this bank or
    - ii. any arrangement entered into between SCDCL and the Company with or without our consent;
    - iii. any forbearance or indulgence shown to the Company,
    - iv. any variation in the terms, covenants or conditions contained in the said Agreement;
    - v. any time given to the Company, OR
    - vi. any other conditions or circumstances under which in a law a surety would be discharged.
  - c) Our liability hereunder shall be joint and several with that of the Company as if we were the principal debtors in respect of the said sum of INR ...../- (Indian Rupees .....only).
  - d) We shall not revoke this guarantee during its currency except with the previous consent of SCDCL in ..... department in writing.

- e) Provided always that notwithstanding anything herein contained our liabilities under this guarantee shall be limited to the sum of INR ...../- (Indian Rupees..... only) and shall remain in force until SCDCL certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the Company.
  
- f) The Bank hereby agrees and covenants that if at any stage default is made in payment of any instalment or any portion thereof due to SCDCL under the said Agreement or if the Company fails to perform the said Agreement or default shall be made in fulfilling any of the terms and conditions contained in the said Agreement by the Company, the Bank shall pay to SCDCL demand without any delay or demur, such sum as may be demanded, not exceeding INR...../- (Indian Rupees.....) and that the Bank will indemnify and keep SCDCL indemnified against all the losses pursuant to the said Agreement and default on the part of the Company. The decision of SCDCL that the default has been committed by the Company shall be conclusive and final and shall be binding on the Bank/Guarantor. Similarly, the decision of SCDCL as regards the Agreement due and payable by the Company shall be final and conclusive and binding on the Bank /Guarantor.
  
- g) SCDCL shall have the fullest liberty and the Bank hereby gives its consent without any way affecting this guarantee and discharging the Bank/Guarantor from its liability hereunder, to vary or modify the said Agreement or any terms thereof or grant any extension of time or any facility or indulgence to the Company and Guarantee shall not be released by reason of any time facility or indulgence being given to the Company or any forbearance act or omission on the part of SCDCL or by any other matter or think whatsoever which under the law, relating to sureties so releasing the guarantor and the Guarantor hereby waives all suretyship and other rights which it might otherwise be entitled to enforce.
  
- h) That the absence of powers on the part of the Company or SCDCL to enter into or execute the said Agreement or any irregularity in the exercise of such power or invalidity of the said Agreement for any reason whatsoever shall not affect the liability of the Guarantor/Bank and binding on the bank notwithstanding any abnormality or irregularity,
  
- i) The Guarantor agrees and declares that for enforcing this guarantee by..... against it, the Courts at Solapur, Maharashtra only shall have exclusive jurisdiction and the Guarantor hereby submits to the same;  
  
1.....  
  
2.....

Signed and Delivered

On behalf of ..... (Name of Bank) (Signature with Date)

By the hand of Mr.....

(Name of Authorised Signatory)

(Seal of the Bank)

Being respectively the Director of the Company, who in token thereof, has hereto set his  
respective hands in the presence of –

1.....

2.....

Address, IFSC Code, Swift Code, Phone Number, Email address and Fax Number of the  
controlling office of the issuing Bank Branch:

## **Appendix 6. Years of Operation (PQ 1)**

*[To be printed on the Bidder's letter head and signed by the authorized signatory]*

Date: dd/mm/2018

To,  
**The Chief Executive Officer,**  
**Solapur City Development Corporation Limited (SCDCL),**  
New Planning Office,  
Near Milk Dairy, Saat Rasta,  
Solapur, 413003  
Maharashtra, India  
Tel: -0217-2740300, Fax: -0217-2740306  
E-mail: - solapurcitydcl@gmail.com

Dear Sir/ Madam,

Please find the details of the Bidder for participation the RFP for “**Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project**”. bearing Tender No. 2018-19/09 dated 24/08/2018

#	Particulars	Details of Bidder (Lead Member in case of JV)	Details of JV Member (In case of JV)
1	Name of the organization		
2	Type of organization (private limited/ public limited/ sole proprietorship/ partnership firm/ LL.P./ HUF)		
3	Country of registered office		
4	Address of registered office		
5	Company registration details		
6	Date of registration		
7	Professional registration (COA etc)		
8	Date of professional registration		
9	Details of any global certifications		
10	PAN/ Equivalent		

1 1	TIN/ Equivalent		
1 2	No. of years of operations in India		
1 3	Authorized Signatory's name		
1 4	Authorized Signatory's designation		
1 5	Class II/III Digital Signature Certificate ID number of the Authorised Signatory		
1 6	Email and Phone Number of Authorised Signatory		
1 7	Authorized Signatory's contact details		

The below mentioned annexures (as applicable) have been attached for the Bidder to further demonstrate that that the Bidder has been operational at least for five(5) years as on the Bid Submission Date:

1. Certificate of Incorporation/Registration under the Companies Act 1956/ Companies 2013 or under the Limited Liability Partnership Act, 2008..
2. Memorandum and Articles of Association.
3. Certificate as per Shops & Establishments Act.
4. GST Registration Certificate.
5. Partnership Deed/ LL.P. Agreement.

Yours sincerely,

---

Signature of Authorized Signatory (with official seal)

Name : [•]  
Designation : [•]  
Address : [•]  
Telephone& Fax : [•]  
E-mail address : [•]



## **Appendix 7. Financial Strength – Turnover (PQ 2)**

*[To be printed on the Bidder's letter head and signed by the authorized signatory]*

Date: dd/mm/2018

To,  
**The Chief Executive Officer,**  
**Solapur City Development Corporation Limited (SCDCL),**  
New Planning Office,  
Near Milk Dairy, Saat Rasta,  
Solapur, 413003  
Maharashtra, India  
Tel: -0217-2740300, Fax: -0217-2740306  
E-mail: - solapurcitydcl@gmail.com

Dear Sir/ Madam,

I have carefully gone through the terms and conditions contained in the RFP tender Document for **“Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8 Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project”**, Tender No. 2018-19/09 dated 24/08/2018.

I hereby declare that below are the details regarding Overall turnover over last 3 financial years for our organization.

S. No.	Financial Year	Annual Revenue of Bidder (INR)
1.	2015-16	
2.	2016-17	
3.	2017-18	
Average Annual Turnover		[ indicate sum of the above figures divided by 3]
Certificate from the Statutory Auditor  This is to certify that..... [Name of the Bidder] [Registered Address] has received the payments shown above against the respective years.		

Name of Authorized Signatory:

Designation: [•]

Name of Bidder: [•]

(Signature of the Statutory Auditor)

Seal of the Bidder

The below mentioned have been attached to further demonstrate the financial strength of the Bidder:

1. Annual Return Fillings
2. Annual Reports
3. Income Tax Filings and reports

## **Appendix 8. Financial Strength – Net worth (PQ 3)**

[To be printed on the Bidder's letter head and signed by the authorized signatory]

Date: dd/mm/2018

To,  
**The Chief Executive Officer,**  
**Solapur City Development Corporation Limited (SCDCL),**  
New Planning Office,  
Near Milk Dairy, Saat Rasta,  
Solapur, 413003  
Maharashtra, India  
Tel: -0217-2740300, Fax: -0217-2740306  
E-mail: - solapurcitydcl@gmail.com

Dear Sir/ Madam,

I have carefully gone through the terms and conditions contained in the RFP tender Document for "**Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8 Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project**", bearing Tender No. 2018-19/09 dated 24/08/2018.

I hereby declare that below are the details regarding the net worth as per the latest financial audits for our organization as per last audited financial year.

<b>S R.</b>	<b>Financial Year</b>	<b>Net Worth of Bidder (INR)</b>
1.	2017-18	
<b>Certificate from the Statutory Auditor</b>  This is to certify that..... [Name of the Bidder][Registered Address] has received the payments shown above against the respective years.  Name of Authorized Signatory: [•]  Designation: [•]  Name of Bidder: [•]  (Signature of the Statutory Auditor)  Seal of the Bidder		

I further certify that I am competent officer in my company to make this declaration.

Yours sincerely,

---

Signature of Authorized Signatory (with official seal)

Name : [•]

Designation : [•]

Address : [•]

Telephone& Fax : [•]

E-mail address : [•]

**Appendix 9. Relevant Experience – Similar Projects and Services(PQ 4)**

*[To be printed on the Bidder's letter head and signed by the authorized signatory]*

Date: dd/mm/2018

To,  
**The Chief Executive Officer,**  
**Solapur City Development Corporation Limited (SCDCL),**  
New Planning Office,  
Near Milk Dairy, Saat Rasta,  
Solapur, 413003  
Maharashtra, India  
Tel: -0217-2740300, Fax: -0217-2740306  
E-mail: - solapurcitydcl@gmail.com

Dear Sir/Madam,

I have carefully gone through the terms and conditions contained in the RFP tender Document for “**Selection of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites at Solapur City under Smart City Project**”, bearing Tender No. 2018-19/09 dated 24/08/2018.

I hereby declare that the documents containing project details enclosed are the details regarding similar projects that have been taken up by our company.

I further certify that I am competent officer in my company to make this declaration.

Yours sincerely,

---

Signature of Authorized Signatory (with official seal)

Name : [•]

Designation : [•]

Address : [•]

Telephone& Fax : [•]

E-mail address : [•]

## **Appendix 9a**

***[To be made in accordance of Section 4.1.2(i)]***

***[make a copy of this page for each project proposed to be submitted with  
this document]***

**Project Serial No. – [To be entered serially starting from 1 e.g. Project Serial No.  
1, Project Serial No. 2]**

<b>Name of the Project</b>	<b>Qualifying Project</b>
General Information	
Client for which the project was executed	
Name of the client contact person(s)	
Designation of client contact person(s)	
Contact details of the client contact person(s)	
Project Details	
Description of the project	
Scope of work of the Bidder	
Deliverables of the Bidder	
Size of the project	
Other Details	
Total cost of the project	
Total cost of the services provided by the Bidder	
Duration of the project (number of months, start date, completion date, current status)	
Mandatory Supporting Documents:	
Work order / Purchase order / Contract for the project	
Client Certificate giving satisfactory status of the project and view of the quality of services by the Bidder	

**Appendix 9b**

**(List of Machinery)**

Sr. No.	Type of Equipment	No. of Units	Kind and Make	Age of Machinery	Present Condition of Machinery	Present Location with name and address of organization where machinery is in use	Whether Machinery is owned or rented

*Note: To be filled and submitted along with Appendix 9.*

## Appendix 9c

### (List of Personnel)

Sr. No.	Name of the person/ Nos	Qualification	Whether working in field or office	Minimum Experience in execution of similar works	Period for which the person is working with the Tenderer	Remarks
1	2	3	4	5	6	7
	Project Manager	B.E. Civil	Field (fulltime)	15 Years		
	Site Engineer with Degree/Diploma in Civil Engineering	Degree/Diploma in Civil Engineering	Field (fulltime)	5(for Degree holders) / 7 (for Diploma holders) years' experience		
	Quality Control / Quality Assurance Engineer	B.E. Civil	Field (fulltime)	5 years of relevant experience		
	Traffic Manager / Safety Officer		Field (fulltime)	5 years' experience in Road Safety and Management		
	Sr. Electrical Engineer	Degree in Electrical Engineering	Field (fulltime)	10 yrs working experience		
	Quantity Surveyor	B.E. Civil	Field (fulltime)	5 years' experience in		
	Infrastructure Engineer	B.E. Civil	Field (fulltime)	5 years' experience in		
	Site Engineer	Degree/Diploma in Electrical Engineering	Field (fulltime)	5(for Degree holders) / 7 (for Diploma holders) years' experience		

*Note: To be filled and submitted along with Appendix 9*



## **Appendix 10. Declaration of Compliance**

(on non-judicial Stamp Paper of Rs.500)

I/ We hereby declare that we take cognizance of Government Resolution

शासन परिपत्रक क्रमांक-संकिर्ण-२०१७/प्र.क्र.१/नियोजन-३ dated 27 April 2017 and shall maintain the highest standards of quality, safety and workmanship throughout the **Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with approximate total length 10.8Km road/ street/ footpath/junction/related utilities on project sites in Solapur City under Smart Cities Mission** . I/We hereby declare that I/We shall alone bear responsibility of the quality, safety and workmanship of said construction, and indemnify SCDCL / Principal Consultant / Urban Designer of any obligation towards the same.

Date :

Signature of Bidder

**Appendix 11. Details of any Past or Pending Litigation or Arbitration Proceedings, References, Claims or Demands, as the case may be**

Information regarding Litigation / Arbitration during last five years in which the bidder is involved, the parties' concerned and disputed amount.

a) **Pending Litigation**

- No pending litigation in accordance with Section 4, Qualification Criteria and Requirements, Sub-Factor 4.12.2 (h).
- Pending litigation in accordance with Section 4, Qualification Criteria and Requirements, Sub-Factor 4.12.2 (h).as indicated below.

Year of dispute	Amount in dispute	Outcome as Percentage of Net Worth	Contract Identification	Total Contract Amount (current value, currency, exchange rate and USD equivalent)
[insert year]	[insert amount]	[insert percentage]	Contract Identification: [indicate complete contract name, number, and any other identification]  Name of Client: [insert full name]  Address of Client: [insert street/city/country]  Matter in dispute: [indicate main issues in dispute]  Status of dispute: [Indicate if it is being treated by the Adjudicator, under Arbitration]	[insert amount]

Year of dispute	Amount in dispute	Outcome as Percentage of Net Worth	Contract Identification	Total Contract Amount (current value, currency, exchange rate and USD equivalent)
			or being dealt with by the Judiciary]	

**b) Litigation History**

- No court/arbitral award decisions against the Applicant since 1st January [insert year], in accordance with Section 4, Qualification Criteria and Requirements,
- Court/ arbitral award decisions against the Applicant since 1st January [insert year], in accordance with Section 4, Qualification Criteria and Requirements

Year of award	Contract Identification	Total Contract Amount (current value, currency, exchange rate and USD equivalent)
[insert year]	Contract Identification: [indicate complete contract name, number, and any other identification] Name of Client: [insert full name] Address of Client: [insert street/city/country] Matter in dispute: [indicate main issues in dispute] Party who initiated the dispute: [indicate "Client" or "Contractor"] Status of dispute: [indicate if it is being treated by the Adjudicator, under Arbitration or being dealt with by the Judiciary]	[insert amount]

Preceding 5 years to be reckoned from the 31<sup>st</sup>. March of the last financial year.

**SIGNATURE OF BIDDER**

## Appendix 12. Contract Data (Appendix to Bid)

[Note: with the exception of the items for which the Client's requirements have been inserted, the following information must be completed before the Tender is submitted].

Sr. No	Item	Data
1	Client's name and Address	The Chief Executive Officer, Solapur City Development Corporation Limited, New Planning Office, Near Doodh Dairy, Saat Rasta, Solapur, 413003. (INDIA)
2	Contractors Name and Address	
3	Urban Designer- (Architects and PMC) Name and Address	Consortium of SGS+ VK:a+LKS
4	Time for Completion for Work	18 Calendar Months including monsoon.
5	Defects Liability Period	For Water supply and Sewerage works- 5 (Five) years after date of issuance of Completion Certificate. And operation and maintenance of 6 (Six) Years.  For other works in tender (roads, storm water drainage, electrical, street lights etc) - 5 (Five) years after date of issuance of Completion Certificate.
6	Electronic transmission Systems	e-mail, soft copies in CD / DVD
7	Governing Law	Laws of India and local law applicable to site of work
8	Ruling language	English
9	Language for Communications	English/ Marathi / Hindi
10	Time for access to the Site	As per the Local conditions to be verified by the contractor
11	Estimated Cost	Rs.87,73,64,569
12	Bid Security(EMD)	0.5 % Rs. 43,86,900 (will be converted in SD of successful bidder)
13	Performance Security (SD)	10% of Rs. 87,73,64,569 (2% as Initial Security Deposit + 7.5% will be deducted from each R.A. Bill), Total SD shall be 10% of Contract Value
14	Period for submission of the work program	20 Days after the receipt of work order

15	Payment Certificate	Minimum amount of Interim bill 10% of contract value
16	Currency/currencies of payment	Indian Rupees (INR) payable in India
17	Periods for submission of insurance	Within 15 days of the issue of LOI.

For similar assignments successfully completed, copy of Contract agreement or Completion Certificate from the competent authority needs to be attached.

## **Appendix 13. General Technical Specifications (Appendix to Bid)**

1. The General Technical Specifications comprise the “Specification for Road and Bridge Works” (Fifth Revision) issued by the Ministry of Road Transport and Highways (MORT&H), Government of India and published by the Indian Road Congress, New Delhi and for items not covered by these specification Standard Specifications edition, 1979, published by the Public Works Department, Govt. of Maharashtra, deemed to be bound into this document, unless and otherwise specifically relaxed wholly or partly through a special clause in the contract document. & relevant BIS codes of practice.

### 1.1 Abbreviations Used

- |                      |   |                                       |
|----------------------|---|---------------------------------------|
| a) LM / Lm / RMT/Rgm | = | Linear Meter / Running Meter          |
| b) Cum.              | = | Cubic Meter                           |
| c) Sqm.              | = | Square Meter                          |
| d) Cum /cc           | = | Cubic Centimetre                      |
| e) No.               | = | Numbers                               |
| f) MT / Tonne        | = | Metric Tonne                          |
| g) Hr                | = | Hours                                 |
| h) Ha                | = | Hector                                |
| i) MoRT&H            | = | Ministry of Road Transport & Highways |
| j) IRC               | = | Indian Roads Congress                 |
| k) BIS               | = | Indian Standards.                     |

## **2. MISCELLANEOUS :**

- 2.1 The special provision in detailed specifications or wording of any item shall gain precedence over corresponding contradictory provision (if any) in the standard specifications or P.W.D. Hand Book where reference to such specifications is given without re-producing the details in contract.
- 2.2 It is presumed that the Contractor has gone carefully through MORTH Specification &P.W.D. Hand Book and the Schedule of Rates of the Division and studied the site conditions before arriving at rates quoted by him. Decision of the Engineer-in-charge shall be final as regards interpretation of specifications.
- 2.3 Stacking and storage of construction material at site shall be in such a manner as to prevent deterioration or intrusion of foreign matter and to ensure the preservation of their quality, properties and fitness for the work. Suitable precautions shall be taken by the Contractor to protect the material against atmospheric actions, fire and other hazards. The materials likely to be carried away by wind shall be stored in suitable stores or with suitable barricades and

where there is likely-hood of subsidence of soil, such heavy materials shall be stored on approved platforms.

- 2.4 For road and grade separator works the contractor shall in addition to the specifications cited here, comply with requirements of relevant I.R.C. Code Practice. Latest edition of MORTH specification and BIS codes shall be applicable for this work.
- 2.5 The contractor shall be responsible for making good the damages done to the existing property during construction by his men.
- 2.6 If it is found necessary from safety point of view to test any part of the structure, the test shall be carried out by the contractor with the help of the Department at his own cost.
- 2.7 The contractor shall provide, maintain, furnish and remove on completion, temporary shed for office on work site for the use of Project Engineer's representative.
- 2.8 Defective work is liable to be rejected at any stage. The contractor on no account can refuse to rectify the defects merely on reasons that further work has been carried out. No payment shall be made for rectification.
- 2.9 General directions or detailed description of work, materials and all coverage of rates given in the specification are not necessary repeated in the Bill of Quantities. Reference is however, drawn to appropriate section clause(s) of the General specifications accordance with which the work is to be carried out.
- 2.10 In the absence of specific directions to the contrary, the rates and prices inserted in the terms are to be considered as the full inclusive rates and prices for the finished work described there-under and are cover all labour, materials, wastage, temporary work, plant overhead charges and profiles, as well as the general liabilities, obligations and risks arising out of the General Conditions of Contract.
- 2.11 The quantities set down against the item in the Schedule 'B' are only estimated quantities of each kind of work included in the Contract and are not to be taken as a guarantee that the quantities schedule will be carried out or required or that they will not be exceeded.
- 2.12 All measurements will be made in accordance with the methods indicated in the specification and read in conjunction with the General Conditions of Contract.
- 2.15 The details shown on drawings and all other information pertaining to the work shall be treated as indicative and provisional only and are liable to variation as found necessary while preparing working drawing which will be supplied by the SCDCL during execution. The contractor shall not, on account of such variation be entitled to any increase over the ones quoted in the tender which are on quantity basis. The contractor has to make his own investigation before quoting for the work.
- 2.16 The recoveries if any from contractor will be affected as arrears of land revenue through the Collector of the District.
- 2.17 Specifications of Road and drainage works adhered herewith will be applicable to works as per Schedule 'B' unless specified otherwise in the detailed specifications of the relevant items.

2.18 All materials used in the construction shall conform to the requirement of Specification Clause under Section-100 "Materials for Structures" of Specification of Road and Bridge Works MORTH New Delhi.

2.19 Protection of underground telephone cable and aerial telephone wires and poles, transmission towers, electrical cables and water supplying lines.

During the execution of work, it is likely that the contractor may meet with telephone cable, electrical cables, water supply lines etc. it will therefore be the responsibility of the Contractor to protect them carefully. All such cases should be brought to the notice of the Engineer-in-charge by the contractor and also to the concerned department. Any damage whatsoever done to these cables and pipe lines by the contractor shall be made good by him at his cost.

### **3.. Order of precedence, clarifications and interpretations:**

When various specifications and codes referred to in presiding portion are at variance with each other following order of precedence will generally be accepted.

- i) Special conditions of contract, Item wise specifications, revised specifications if provided and execution drawing notes etc.
- ii) MORT&H Specifications (Specifications for Roads & Bridge work)
- iii) I.S. Codes of practice.
- iv) Standard specification 1979 PWD Govt. of Maharashtra.

In case of items for which specifications are not available in the above mentioned specifications good sound engineering practice shall be followed and in such case specifications given by the Client consultants shall be final & binding on the contractor.

### **4. Specifications for materials :**

All material to be used in work shall satisfy provision of relevant specifications of Road and Bridge.

### **5. Method of MEASUREMENT:**

The method of measurement and payment shall be as described under various items and bill of quantity where specific definitions are not given, the method described in MoRT&H Specification will be followed.

6. All works shall be carried out in line & level as shown on execution drawing and as directed by Engineer.

### **7. Clearance of SITE:**

The work of site clearance before & after completion of work shall be as per Section 200 of MoRT&H specifications. Contractor shall visit the site before submitting his offer and assess the quantum of work for clearing the site before execution, during execution & after completion of work.

Mode of measurement & payment for this item is on lump sum basis and include all type of site clearance as required by the Engineer, and include cost of labour material, T & P.

### **8. Excavation for ROAD:**

8.1 As per the respective BOQ items & their specifications mentioned.

Contractor shall note that the water table may be at higher level which will necessitate the dewatering. Dewatering and removal of water is incidental to item of work. No separate payment for dewatering etc. will be made by SCDCL.

8.2 Setting Out :

After site is cleared and leveled, alignment & location shall be mark and excavation limit shall be set out true to lines and section as shown on working drawings. The contractor shall



provide all labour, survey instrument i.e. Total station and materials required for setting out.

#### 8.3 Disposal of excavated material :

All excavated material shall be used in work as directed. Usable surplus material shall be stacked properly as directed. Unusable excavated material shall be disposed of by the contractor as specified & directed by the Engineer.

#### 8.4 Measurement :

Excavation work shall be measured for depth below existing road / ground level. Measurement shall generally confirm to MoRT&H Specification Section –300 Clause 304.40. Each change of strata shall be got certified by the Engineer in charge. Measurement for excavation shall be as required for the exact width length and depth as shown on the drawing or as directed by the Engineer.

No excess excavation will be considered for payment and extra work occasioned shall be done at contractor risk & cost.

#### 8.5 Rate include

- a) Excavation & disposing of material including backfilling etc. as directed.
- b) Setting out works profiles etc.
- c) leveling of surface
- d) Site clearing
- e) Dewatering

#### FOLLOWING SPECIFICATION SHALL BE ADOPTED FOR ITEM WORK

SR. NO.	DESCRIPTION	REFERENCE TO SPECIFICATION MoRT&H SPECIFICATIONS FOR ROAD AND BRIDGE WORK
1	Setting out of work	Section 100 Clause 109
2	Material	Section 1000 & BIS
	a) Cement	Clause 1006
	b) Steel	Clause 1009.3
	c) Aggregate Course	Clause 1007 (I.S. Code 383)
	d) Aggregate Fine	Clause 1008 (I.S. Code 383)
	e) Water	Clause 1010
	f) Bitumen	Grade 80/100 or 30/40 (I.S. 73) as specified.
	g) Admixture	Clause 1012
3	Storage of materials cement, steel, H.T. steel, aggregate, prestressing material.	Section 1000 Clause 1014
4	Excavation for structure and foundation	MOST Section 300 Clause 304
5	Concrete for PCC, RCC work	Section 1700
6	Pavement Quality Concrete (PQC)	Section 602, 900 & 1000.
7	Steel	
	a) H.Y.S.D. reinforcement	Section 1000 Clause 1009.3 & IS 1732
8	Protection, bending, placing	Section 1600

	etc. for steel	
9	Polypropylene Fibers	ASTM C-1116, Type III 4.1.3. ASTM C-1116, Performance Level 1 ASTM C-1399 (min. average residual strength of 0.35 Mpa).
10	Expansion Joint	Section 2600
11	Construction Joint	Section 1700 Clause Appendix – 1700 / I
12	Asphalt Wearing coat	Section 500 & Section 900
	a) Prime Coat	Section 500 Clause 502
	b) Tack Coat	Section 500 Clause 503
	c) Bitumen Macadam	Clause 504
	d) Dense Bitumen Macadam	Clause 507
	e) Asphaltic / Bitumen Concrete	Clause 509
	f) Mastic Asphalt	Clause 515
13	Weep Hole	Section 2700 Clause 2706
14	Drainage Water Spout	Section 2700 Clause 2707
15	Metal beam crash barrier	Section 800 Clause 810
16	Traffic sign marking and other road appurtenances	Section 800
17	Item not covered above	Relevant Clause of MoRT&H Specification for Road & Bridge & IRC Codes and relevant I.S. code and specification.

## 9. SPECIFICATIONS INTERLOCKING CEMENT CONCRETE PAVER BLOCKS

The interlocking concrete blocks should be procured from manufacturer approved by SCDCL and satisfying the following criteria. IRC SP 63 2004 shall be used as guideline for Paver Block work.

- a. Manufacturer shall have fully automatic vibro pressing plant with vertical vibration system to ensure maximum compaction to achieve required strength. The grade of concrete should be M – 40, thickness 80mm M – 30, thickness 60mm and M – 50, thickness 100mm.
- b. Manufacturer shall have adequate capacity mixer with digital water meter / moisture control system to maintain constant water/ cement ratio.
- c. Manufacturing plant shall have complete automation with computerized weigh batching system for consistent quality of paving blocks.
- d. Blocks shall be moist cured for initial 24 hours and then water cured for at least 15 days before dispatch to site.
- e. Manufacturer shall have complete laboratory setup for testing blocks as per IS 15658-2006 and should be on approved list of MMRDA, MCGM, PCMC or equivalent organization.
- f. Manufacturer shall possess excise registration certificate.

## 10. TRAFFIC MANAGEMENT DURING CONSTRUCTION

- 1 The Contractor shall at all times carry out work on the road in a manner creating least interference to the flow of traffic while consistent with the satisfactory execution of the same. For all works involving improvements to the existing highway, the Contractor shall, in accordance with the directives of the Engineer, provide and maintain, during execution of the work, a passage for traffic either along a part of the existing carriageway under improvement, or along a temporary diversion constructed close to the highway. The contractor shall take prior approval of the Engineer regarding traffic arrangements during construction.
- 2 Signs, lights, barriers and other traffic control devices shall be provided and maintained in a satisfactory condition till such time they are required as directed by the Engineer, so as to ensure smooth and safe traffic on the road throughout the length. Necessary traffic arrangement at temporary diversions by signs, lights, barriers etc. is also included in the scope
- 3 The Contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required by the Engineer for information and protection of traffic approaching or passing through the section of the highway under improvement. Before taking up any construction, an agreed phased programme for the diversion of traffic on the highway shall be drawn up in consultation with the Engineer.

The barricades erected on either side of the carriageway/portion of the carriageway closed to traffic, shall be of strong design to resist violation, and painted with alternate black and white stripes, Red lanterns or warning lights of similar type shall be mounted on the barricades at night and kept lit throughout from sunset to sunrise.

At the points where traffic is to deviate from its normal path (whether on temporary diversion or part width of the carriageway) the channel for traffic shall be clearly marked with the aid of pavement markings, painted drums or a similar device to the directions of the Engineer. At night, the passage shall be delineated with lanterns of other suitable light source.

One-way traffic operation shall be established whenever the traffic is to be passed over part of the carriageway inadequate for two-lane traffic. This shall be done with the help of temporary traffic signals or flagmen kept positioned on opposite sides during all hours. For regulation of traffic, the flagmen shall be equipped with red and green flags and lanterns/lights.

On both sides, suitable regulatory/warning signs as approved by the Engineer shall be installed for the guidance of road users. On each approach, at least two signs shall be put up, one close to the point where transition of carriageway begins and the other 120 m away. The signs shall be of approved design and of refractory type, if so directed by the Engineer.

- 4 Signs, lights, barriers and other traffic control devices, as well as the riding surface of diversions shall be maintained in a satisfactory condition till such time they are required as directed by the Engineer. The temporary travelled way shall be kept free of dust by frequent applications of water, if necessary.

## **TRAFFIC SAFETY MEASURES DURING CONSTRUCTION**

This includes providing traffic safety arrangement required for traffic control near the stretch of road where widening or resurfacing work is being taken up, before actual start of widening/ resurfacing work of road and during the actual work. The contractor will have to provide the traffic safety arrangement as per the detailed drawing. The traffic safety arrangements will have to be got approved from the Engineer by the contractor before taking any construction activities for widening or resurfacing of road. It will be sole responsibility of bidder to provide for sufficient traffic wardens and barricades along the road edge.

The Engineer shall get himself satisfied about the traffic safety arrangement provided on the work site before allowing contractor to commence the widening activity and a certificate to that effect shall be recorded in the Measurement Book. The following traffic signs shall be provided by the contractor.

- A) The sign No. 1 “**SPEED LIMIT (20)**” shall be placed at a distance of 120 m. away from point where the transition of carriageway begins. The sign board shall be in size 60 cm. dia. having white background and red border and the numerals shall be in black color as per IRC: 67-1977. Distance between sign No. 1 and sign No. 2 shall be minimum 20 m.
- B) The sign No. 2 cautionary boards indicating “**NARROW ROAD AHEAD**” shall be placed at a distance of 80 m. away from the point of transition of carriageway. The signboard shall be of an equilateral triangle of size 90 cm. having white color background. Retro-reflective border in red color and non-reflective symbol in black color as per IRC: 67-1977.
- C) The sign No. 3 signboard indicating “**MEN AT WORK / SCDCL ROAD WORK AHEAD**” shall be placed at a distance of 40 m. away from the point of transition of carriageway. The signboard shall be of an equilateral triangle of size 90 cm. having white colour background. Retro-reflective border in red colour and non reflective symbol in black colour as per IRC: 67-1977.
- D) The sign No. 4 the board displaying the message “**GO SLOW- WORK IN PROGRESS— SORRY FOR INCONVENIENCE**” shall be placed at the point of transition of carriageway. The size of signboard shall be 1.0 m x 1.0 m. having red background and retro- reflective messages in white color.

## **BARRICADING FOR WORK:**

The proper barricading of the construction zone for road widening or resurfacing shall be done by contractor by using the following devices and providing adequate number of persons with Flags / Whistles and reflective jackets for traffic control.

- Sand filled plastic cones mounted with Retro-reflective Arrow Hazard Marker sign shall be placed as indicated in the drawing. Plastic cone shall be 73 cm. in height having 39 cm. square/hexagonal bases. Sand filled plastic cones shall be placed along the work is in progress as shown in the drawing. Cones shall be fluorescent orange and shall be made of a material that can be struck without damaging vehicles on impact. For night time use, cones shall be retroreflective or equipped with lighting devices for maximum visibility. Retro reflection shall be provided by a white band 150 mm wide, no more than 100 mm from the top of the cone, and an additional 100 mm white band a minimum of 50 mm below the 150

mm top band. The reflective sheeting used for bands shall be of Class B sheeting as per IRC-67:2011.

- Retro-reflective Strong Inviolable Stand Type Barrier shall be placed at either ends of the widening area up to the edge of the Road. The barricades shall not be removed unless the permission is given by the responsible officer of the rank not less than Deputy Engineer. The Barricade shall have two plates of size 1.30 m x 0.20 m. painted black and shall have white Retro-reflective Strips of Class B sheeting as per IRC-67:2011. and mounted on Angle Iron Stand of 1.0 m. height. Minimum height of barricade shall be 1.50 m. alternatively, the barricading with continuous Tin sheets fixed on wooden posts at distance of not more than 2 m and height not less than 1.5 m shall be used. The tin sheets shall be painted in alternate Black and Yellow paint and maintained in good condition during the widening work. All the excavated portions of road / CD work/ RCC chambers etc shall be covered on all sides with painted Tin Sheet barricading.
- Yellow light flasher shall be kept lit from sunset to sunrise, 2 Nos. along transition line of traffic and 3 Nos. at barriers on both sides.
- Informatory sign board indicating Name of work, Contractor, Consultant, Amount of contract, completion period, Defect Liability period, and Telephone No., name of Junior Engineer, Consultant and Contractor Engineer with Telephone No. shall be provided at the starting point, end point of the stretch of road proposed for widening as per the scope of the agreement.

The signs, lights, barricades and other traffic control devices shall be well maintained, till such time that the traffic is commissioned on the widened road. The size, shape and colour of all the sign and caution boards shall be as mentioned above as per detailed drawings in accordance with the relevant IRC Specifications and as per Ministry of Road Transport & Highway (MORT&H) Specifications.

The sign shall be erected when the maintenance or minor construction activity extends over longer period of time and is of a more stationary nature. It may also be used at intermediate locations on long construction areas to set apart certain road sections having a higher degree of construction activities than observed in other intersections.

## **9. SPECIFICATIONS INTERLOCKING CEMENT CONCRETE PAVER BLOCKS**

The interlocking concrete blocks should be procured from manufacturer approved by SCDCL and satisfying the following criteria. IRC SP 63 2004 shall be used as guideline for Paver Block work.

- g. Manufacturer shall have fully automatic vibro pressing plant with vertical vibration system to ensure maximum compaction to achieve required strength. The grade of concrete should be M – 40, thickness 80mm M – 30, thickness 60mm and M – 50, thickness 100mm.
- h. Manufacturer shall have adequate capacity mixer with digital water meter / moisture control system to maintain constant water/ cement ratio.
- i. Manufacturing plant shall have complete automation with computerized weigh batching system for consistent quality of paving blocks.
- j. Blocks shall be moist cured for initial 24 hours and then water cured for at least 15 days before dispatch to site.
- k. Manufacturer shall have complete laboratory setup for testing blocks as per IS 15658-2006 and should be on approved list of MMRDA, MCGM, PCMC or equivalent organization.
- l. Manufacturer shall possess excise registration certificate.

## **10. TRAFFIC MANAGEMENT DURING CONSTRUCTION**

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- 3 The Contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain such barricades, including signs, markings, flags, lights and flagmen as may be required by the Engineer for information and protection of traffic approaching or passing through the section of the highway under improvement. Before taking up any construction, an agreed phased programme for the diversion of traffic on the highway shall be drawn up in consultation with the Engineer.

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#### **TRAFFIC SAFETY MEASURES DURING CONSTRUCTION**

This includes providing traffic safety arrangement required for traffic control near the stretch of road where widening or resurfacing work is being taken up, before actual start of widening/ resurfacing work of road and during the actual work. The contractor will have to provide the traffic safety arrangement as per the detailed drawing. The traffic safety arrangements will have to be got approved from the Engineer by the contractor before taking any construction activities for widening or resurfacing of road. It will be sole responsibility of bidder to provide for sufficient traffic wardens and barricades along the road edge.

The Engineer shall get himself satisfied about the traffic safety arrangement provided on the work site before allowing contractor to commence the widening activity and a certificate to that effect shall be recorded in the Measurement Book. The following traffic signs shall be provided by the contractor.

- E) The sign No. 1 “**SPEED LIMIT (20)**” shall be placed at a distance of 120 m. away from point where the transition of carriageway begins. The sign board shall be in size 60 cm. dia. having white background and red border and the numerals shall be in black color as per IRC: 67-1977. Distance between sign No. 1 and sign No. 2 shall be minimum 20 m.
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- H) The sign No. 4 the board displaying the message “**GO SLOW- WORK IN PROGRESS– SORRY FOR INCONVENIENCE**” shall be placed at the point of transition of carriageway. The size of signboard shall be 1.0 m x 1.0 m. having red background and retro- reflective messages in white color.

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- Retro-reflective Strong Inviolable Stand Type Barrier shall be placed at either ends of the widening area up to the edge of the Road. The barricades shall not be removed unless the permission is given by the responsible officer of the rank not less than Deputy Engineer. The Barricade shall have two plates of size 1.30 m x 0.20 m. painted black and shall have white Retro-reflective Strips of Class B sheeting as per IRC-67:2011.and mounted on Angle Iron Stand of 1.0 m. height. Minimum height of barricade shall be 1.50 m. alternatively, the barricading with continuous Tin sheets fixed on wooden posts at distance of not more than 2 m and height not less than 1.5 m shall be used. The tin sheets shall be painted in alternate Black and Yellow paint and maintained in good condition during the widening work. All the excavated portions of road / CD work/ RCC chambers etc. shall be covered on all sides with painted Tin Sheet barricading.
- Yellow light flasher shall be kept lit from sunset to sunrise, 2 Nos. along transition line of traffic and 3 Nos. at barriers on both sides.
- Informatory sign board indicating Name of work, Contractor, Consultant, Amount of contract, completion period, Defect Liability period, and Telephone No., name of Junior Engineer, Consultant and Contractor Engineer with Telephone No. shall be provided at the starting point, end point of the stretch of road proposed for widening as per the scope of the agreement.

The signs, lights, barricades and other traffic control devices shall be well maintained, till such time that the traffic is commissioned on the widened road. The size, shape and color of all the sign and caution boards shall be as mentioned above as per



detailed drawings in accordance with the relevant IRC Specifications and as per Ministry of Road Transport & Highway (MORT&H) Specifications.

The sign shall be erected when the maintenance or minor construction activity extends over longer period of time and is of a more stationary nature. It may also be used at intermediate locations on long construction areas to set apart certain road sections having a higher degree of construction activities than observed in other intersections.

## **10 WATER SUPPLY**

### **1.1 Detailed Specifications for Pipeline Works**

#### **1.1.1 Manufacture, Supplying, Laying Jointing and Testing of pipe**

Manufacturing, supplying, laying, jointing, testing and commissioning of pipes used for Water Supply shall conform to Bid Document Standard Specifications and relevant IS codes, as applicable. Any additions and/or modifications specified in this Section shall also be followed. The alignment of water pipelines shown in drawings given in this Section is only indicative and the exact alignment will be as directed by the Engineer-in-charge or his representative.

The water supply pipelines shall be of DI or/and as specified in Schedule B (BOQ).

Pipes shall be laid underground with a minimum earth cover of 1m above the crown of the pipe, unless otherwise specified. All pipes, fittings and material shall be inspected and approved by the Engineer-in-charge before being laid. Any pipes, fittings or material placed before they are inspected and approved shall be removed and replaced with approved material. Before laying the pipe, necessary bedding if required shall be provided to the pipes, wherever specified.

Wherever it is necessary to connect to the existing or Proposed OHT, tube wells and/or any other source of water or any other existing pipelines, already laid pipelines in previous package before terminating, the contractor shall provide necessary Tee's, bends, short pipes, reducers / enlargers, required specials and fitting & jointing materials as per the requirement to complete the work in complete manner.

The Contractor shall assess the diameters, material, specials required for interlinking of proposed pipelines with existing pipelines / already laid pipelines (under previous package) to connect with OHTs / CWRs, Tube wells outlet pipeline, existing and proposed pipelines to complete the distribution network in each Zone/DMA in complete manner.

After installing House Service Connection (HSC), pipelines and commissioning the main distribution lines the contractor shall check leakages if any at the ferrule point of house service pipe so as to ensure no leakage on the house service connection remains. If such leakages are found, contractor shall rectify the same until the defect liability period.

#### **1.1.2 Ductile Iron Pipes**

DI pipes and fittings (Class K7/K9) shall be in accordance with IS: 8329 and DI specials

(K12) as per IS: 9523. Pipes and fittings shall be procured from reputed manufacturers with Engineer-in-charge's approval. Engineer-in-charge or his authorized representative shall at all reasonable times have free access to the place where the pipes and fittings are manufactured for the purpose of examining and testing the pipes and fittings and for witnessing the test and manufacturing, if so desired.

All tests specified either in this specification or in the relevant Indian Standards specified above shall be performed by the supplier/contractor at his own cost and in presence of Engineer-in-charge if desired. For this, sufficient notice before testing of the pipes and fittings shall be given to Engineer-in-charge. Contractor shall arrange third party inspection as stated elsewhere.

If the test is found unsatisfactory, Engineer-in-charge may reject any or all pipes and fittings of that lot. The decision of Engineer-in-charge in this matter shall be final and binding on the contractor and not subject to any arbitration or appeal.

The pipes and fittings shall be stripped, with all precautions necessary to avoid warping or shrinking defects. The pipes and fittings shall be free from defects. Any defect in pipes and fittings in the opinion of Engineer-in-charge shall be rejected and shall be replaced by new one.

In the case of spigot and socket pipes and fittings rubber and tyton joints shall be separately supplied.

In the case of flanged pipes, the flanges shall be at the right angles to the axis of the pipe and machined on face. The bolt holes shall be drilled and located symmetrically off the centre line. The bolt hole shall be concentric with the bore and bolt holes equally spaced. The flanges shall be integrally cast with the pipes and fittings and the two flanges of the pipe shall be correctly aligned.

The Contractor has to identify the type of specials required to link old and new pipes.

### 1.1.3 Material

The materials used in the manufacture of pipes and fittings shall conform to requirements specified in IS: 8329 and IS: 9523 or other relevant / latest edition of IS specifications.

### 1.1.4 Material supplied by the Employer

In addition to the materials which will be procured by the contractor for the works, the contractor shall also carry out laying, jointing, fixing, testing, disinfecting and commissioning of pipelines, specials, valves etc. provided by employer.

### 1.1.5 Dimensions and Tolerances

The internal diameter, thickness and length of barrel, dimensions of pipes and fittings shall be as per relevant tables of IS: 8329/IS: 9523 for different class of pipes and fittings. Each pipe shall be of uniform thickness throughout its length.

The tolerances for pipes and fittings regarding dimensions, mass, ovality and deviations from straight line in case of pipes shall be as per IS: 8329/IS: 9523.

#### 1.1.6 Coating

##### (a) General

Unless otherwise specified, DI pipes and fittings shall be coated with Bitumen in accordance with relevant IS specifications. Coating shall not be applied to pipe and fittings unless its surface is clean, dry and free from rust. Pipe coatings shall be inspected at site and any damage or defective areas shall be made good to the satisfaction of the Engineer-in-charge.

##### (b) Bitumen coating

Bitumen coating shall be of normal thickness of 75 microns unless otherwise specified. It shall be cold applied compound complying with the requirements of relevant Indian standards, factory applied in accordance with the manufacturer's instructions.

##### (c) Cement mortar lining

All pipes and fittings shall be internally lined with cement mortar in accordance with IS: 11906. Cement mortar lining shall be applied at the factory in conformance with the above mentioned standards. No admixtures in the mortar shall be used without the approval of the Engineer-in-charge.

Pipe linings shall be inspected on site and any damage or defective areas shall be made good to the satisfaction of the Engineer-in-charge.

Lining shall be uniform in thickness all along the pipe. The minimum thickness of factory applied cement mortar lining shall be as per IS: 11906.

##### (d) Marking

Marking shall be done as per IS: 8329 and IS: 9523 or any other relevant IS codes.

#### 1.1.7 Jointing of the Pipes

Joints between pipes and specials shall be of Tyton joint with rubber gasket or of flanged joint as specified in Bill of Quantities. Jointing between valves and DI pipes shall be with flanged joint only. Tailpiece with spigot/socket at one end and flange at other end shall be used for jointing Valves pipes to the pipeline with spigot and socket joint (tyton joint).

##### 1.1.7.1 Tyton Joint

Tyton joint shall be with rubber gasket conforming to IS:5382 and IS:12820. The groove and the socket shall be thoroughly cleaned before inserting the rubber gasket. While inserting the gasket it shall be made sure that it faces the proper direction and that it is correctly seated in the groove. After cleaning dirt or foreign materials from the plain end, lubricant shall be applied in accordance with the pipe manufacturer's

recommendations.

### **1.1.7.2 Flanged Joint**

Flanged joint shall be with 1.5 to 3 mm thick rubber gasket in between the flanges. Rubber gasket material shall conform to IS: 638. All fastener material viz. Bolts, Nuts, Washers whether in contact with water or not shall be of MS with GI coating construction and other parameters shall meet the requirement of IS:1363 Class 4.6/Class 4 as relevant.

### **1.1.8 Testing**

#### **1.1.8.1 Test during Manufacturing**

The following tests shall be carried out during manufacture of pipes

##### **a. Mechanical Tests**

Mechanical tests shall be carried out during manufacture of pipes and fittings as specified in IS: 8329 / IS: 9523. The frequency and sampling of tests for each batch of pipes shall be in accordance with IS: 8329. The test results so obtained for all the pipes and fittings of different sizes shall be submitted to Engineer-in-charge. The method for tensile tests and the minimum tensile strength requirement for pipes and fittings shall be as per IS: 8329/IS: 9523.

##### **b. Brinell Hardness Test**

For checking the Brinell hardness, the test shall be carried out on the test ring or bars cut from the pipes used for the ring test and tensile test in accordance with IS: 1500. The test shall comply with the requirements specified in IS: 1500/IS: 8329.

##### **c. Re-tests**

If any test piece representing a lot fails in the first instance, two additional tests shall be made on test pieces selected from two other pipes from the same lot. If both the test results satisfy the specified requirements, the lot shall be accepted. Should either of these additional test pieces fail to pass the test, the lot shall be liable for rejection.

##### **d. Hydrostatic Test**

For hydrostatic test at works, the pipes and fittings shall be kept under test pressure as specified in IS: 8329 / IS: 9523, during which the pipes shall be struck moderately with a 700g hammer for conformation of satisfactory sound. They shall withstand the pressure test without showing any leakage, sweating or other defect of any kind. The hydrostatic test shall be conducted before surface coating and lining.

#### **1.1.8.2 Field Hydrostatic Test**

After the new pipe is laid, jointed and partially back filled tests are to be carried out. Portions of the line shall be tested by subjecting the pressure test as the laying progresses before the entire line is completed (the test stretch should not generally exceed 500 m or as directed by Engineer in-Charge), to identify any error of workmanship which can be detected and corrected at minimum cost. For all these tests water of approved quality has to be arranged by the Contractor.

##### **a. Pressure test**

The field test pressure shall be carried out as specified by the Central Public Health and Environmental Engineering Organization, Ministry of Urban Development.

The field test pressure should not be not less than the maximum of the following:

- (a) 1 ½ times the maximum sustained operating pressure.
- (b) 1 ½ times the maximum pipeline static pressure.
- (c) Sum of the maximum sustained operating pressure and the maximum surge pressure.
- (d) Sum of the maximum pipeline static pressure and the maximum surge pressure, subject to a maximum equal to the work test pressure for any pipe fittings incorporated.

Pipes and joints shall be absolutely water tight under the test. The procedure for pressure testing shall be as follows:

- (i) Each valved section of the pipe shall be slowly filled with water and all air shall be expelled from the pipe through the hydrants and blow offs. If these are not available at high places, necessary taping may be made at points of highest elevation before the test is made and plugs inserted after the tests have been completed.
- (ii) Sufficient backfill shall be placed on the pipe to resist the movement due to pressure while testing. Trench shall be partially backfilled such that the joints, couplings, valves, hydrants or any other fittings shall be left exposed for observations during testing. The specified pressure based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to pipe in a manner satisfactory to the Engineer-in-charge. The duration of the test shall not be less than 1 hr.
- (iii) During testing, all exposed pipes, fittings etc., should be carefully examined. When the joints are made with lead, all such joints showing visible leaks shall be recaulked until tight. When the joints are made with cement and show seepage or slight leakage, such joints shall be cut out and replaced as directed by the Engineer-in-charge. Any cracked or defective pipes, fittings, valves or hydrants etc., discovered in consequence of this pressure test shall be removed and replaced by sound material and the test shall be repeated until satisfactory to the Engineer-in-charge.

#### **b. Leakage test**

After the successful completion of the pressure test, Leakage test shall be conducted at a pressure to be specified by the Engineer-in-charge for duration of two hours. The procedure for Leakage test shall be as follows:

- (i) Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.
- (ii) No pipe installation shall be accepted until the leakage is less than the quantity of  $\text{cm}^3/\text{hr}$ , as determined by the following formula:

$$ql = (ND\sqrt{P})/115$$

where

ql = the allowable leakage in  $\text{cm}^3/\text{hr}$

N = number of joints in the length of the pipe line,

D = diameter of pipe in mm, and

P = average test pressure during the leakage testing kg/cm<sup>2</sup>

(iii) Should any test of the pipe laid in position disclosed leakage greater than that obtained by the above formula, the defective joints shall be replaced until the leakage is within the specified allowance. This should not exceed 0.1 liter per mm of pipe per km per day for each 30m head of water pressure applied.

The factory test pressure shall be as per IS 8329.

### 1.2 Measurement of pipes and specials

The length of pipe shall be measured in running meter correct to a centimetre for the finished work measured along the centre line of pipe exclusive of specials, valves and its specials like tail pieces, dismantling joints etc. Specials shall be measured separately and payment for the same shall be made for the actual quantity provided. For avoidance of doubt it is clarified that the amount provided for specials in respective BOQ item under Schedule B is provisional and the payment will be made on the actual quantity provided. Variation in rate shall not be applicable for increase or decrease in actual cost to any extent than provided in the BOQ.

The following items in MJP Schedule of Rate 2018-19 shall be referred for rates for payment of specials:

a) CI mechanical joints / fittings - as per MJP, Item no. 1-9, page no. 260-269
b) DI specials and fittings - as per MJP, Item no. 10 a) and 10 b) , page no.92
c) MS specials of required thickness as per Item no. 7 a) to 7 f), page no.89, 90

### 1.3 Carting and Handling

Pipes and fittings/specials shall be transported from the factory to the work sites at places along the alignment of pipeline as approved by Engineer-in-charge in lengths not more than the length of the transporting vehicle. Contractor shall be responsible for the safety of pipes and fittings/specials in transit, loading/unloading. Every care shall be exercised in handling pipes and fittings/specials to avoid damage. While unloading, the pipes and fittings/specials shall not be thrown down from the truck on to hard surfaces. They should be unloaded on timber skids with steadying ropes and / or by any other approved means. Padding shall be provided between coated pipes, fittings/specials and timber skids to avoid damage to the coating. Suitable gaps between pipes should be left at intervals in order to permit access from one side to the other. As far as possible pipes shall be unloaded on one side of the trench only. The pipes shall be checked for any visible damage (such as broken edges, cracking or spalling of pipe) while unloading and shall be sorted out for replacement. Any pipe, which shows damage in the opinion of Engineer-in-charge, shall be discarded and replaced by new one without extra cost. Dragging of pipes and fitting/specials along Road or pipeline alignment shall be prohibited.

## 1.4 Earth work in excavation for pipeline trench

### 1.4.1 General

The earthwork excavation for laying of pipes shall be carried out as per standard specification followed by the State Government or an Indian Standard Specification (if available). The Contractor shall make all excavations required for laying and jointing of the pipeline and construction of pertinent structures as required by the project. Except where otherwise required by the project or instructed by the Engineer-in-charge, all excavation shall be in open cut to the specified widths and depths. The Contractor is advised to satisfy himself with regard to the likely conditions that may be met with during the execution of the Works, with regard to the underground obstructions or conditions, excavation and pipe laying in storm water drains, necessary dewatering requirements or construction of coffer dams, diversion bunds, and construction of temporary drains etc., before quoting the rates.

The Contractor shall be responsible for the adequate pumping, drainage and bailing out of water from the excavation. In case of failure to make such provisions or any other provisions, which may result in unsuitable sub-grade conditions, the Contractor shall replace and repair the sub-grade as directed to the satisfaction of the Engineer-in-charge, at his own cost and responsibility.

If the Contractor select to use a gravel sub-grade to facilitate flow of water to pumps or other points of disposal, such gravel sub-grade shall not be measured or paid for as an extra item. Contractor should assess the availability of extra earth required for refilling in case of shortage in any particular reach well before quoting rates. Even in case the Contractor resorts to mechanical excavation, the Contractor should take care of proper refilling, consolidation and disposal of surplus earth.

The Earthwork for laying of the water mains shall include:

- Removal of all surface obstructions including shrub, jungle, etc.;
- Carrying out all necessary excavations;
- Providing and installing at place all sheathing, shoring and bracing to the trenches as necessary for the work and removal thereof after the work;
- Pumping and bailing out water for progressive excavation and to keep trenches dry during preparation of bedding, pipe laying and jointing process till the joints mature;
- Providing for uninterrupted surface water flow during progress of work;
- Arrangement for diversion of flows from storm drains, valleys or other sources;
- Protecting all pipes, conduits, culverts, Roads, railway tracks, utility poles, fences, buildings, and other public and private properties fouling the work;
- Back-filling with excavated material, except where granular fill is recommended;
- Removal and disposal of surplus spoil from excavation after back filling to the specified lead ;
- Levelling and dressing of surplus spoil from excavation or part of it in soil banks along with the trench as directed by Engineer-in-charge;
- Restoring all structures and properties injured or disturbed by the construction activities to its original shape.

- Restoring the surface of all Roads, streets, valleys, walks, drives, easements, working spaces, and right of way to a condition as good as prior to excavation, unless otherwise required by the Engineer-in-charge;
- Introducing Safety measures for carrying out the work in all respect

The Contractor shall include in his rate of excavation all associated items of works as indicated below for which no extra measurement and payment will be made :

- (i). Supply installation and removal after the work all sheathing, shoring and bracing required to protect the excavation.
- (ii). Provision of side space or additional space in the trench/pit for working and/or accommodating sheathing, shoring, bracing, etc.
- (iii). Excavation outside of pipeline limits except under written order from the Engineer-in-charge for extra work or for removal of unsuitable sub grade as specified.
- (iv). Protection of excavation.
- (v). Undertaking all safety measure.
- (vi). Control on water.
- (vii). Any additional work in connection with overhead wires and poles.
- (viii). Unauthorised excavation.
- (ix). Excavation for socket or collar hollows.
- (x). Change in trench location.
- (xi). Additional work in conducting blasting operation in case of excavation in rock
- (xii). Supply and fixing of sight rails and boning rods in the trench to facilitate measurement of work.
- (xiii). Disposal of excavated earth after back-filling up to a lead of 50 metre.
- (xiv). Traffic diversion arrangement during work execution.

#### 1.4.2 Classification of Excavation

All materials involved in excavation shall generally be classified as follows and paid as provided in BOQ items as per actual strata encountered. Engineer in-charge decision for classification of strata shall be final and binding on Contractor.

##### **1.4.2.1 All kinds of Soil**

This includes excavation in all types of soil including soil containing soils of all types, sand, gravel and soft murum.

##### **1.4.2.2 Hard Murum**

##### **1.4.2.3 Hard Murum and boulders, W.B.M. road**

##### **1.4.2.4 Soft rock , old cement and lime masonry foundation & asphalt road**

##### **1.4.2.5 Hard rock and concrete road**

#### 1.4.3 Limits of excavation

The width of trench for laying of pipeline shall be  $D+0.6m$ , where D is the outer diameter of the Pipe but in no case the width of the trench should not be less than 0.6 m wide. It is expressly clarified here the excavation for laying the other services will be done along side the water pipe line and trench for laying the water pipeline may overlap with other trenches i.e for sewerage, storm water, utility duct etc. Contractors shall co-ordinate with other



agencies and Engineer in-Charge and plan the sequence of excavation required for different items under this contract or sequence and extent of excavation required depending on the works undertaken by other agencies. Engineer in-Charge decision in this regards shall be final and binding on Contractor. The Bill of Quantities of excavation for trenches water supply line are provided for the trench width of D+0.6m. However as clarified above , in the event , trench for water supply overlaps with other trenches, the measurement for trench excavation shall be recorded deducting the overlapping width depending on the site condition. The estimated quantities may change due to overlapping of trenches and variation in rate shall not be applicable. A minimum earth cover of 1.0 m shall be maintained above the pipe crown, unless otherwise specified or shown in the alignment/construction drawings. Any extra excavation required for providing suitable bedding for the pipeline or for maintaining the grade of the pipeline, shall be paid extra at actual, and based on the quoted rates. Concrete encasing all over the pipe shall be provided if trench depth is less than 1m depth due to unavoidable obstruction upon the approval of the Engineer-in-charge.

The Contractor shall not excavate beyond the dimensions specified or shown in the drawings. Should the excavation occur beyond the dimensions specified therein, because of the negligence of the Contractor, the Contractor shall fill the excess space with granular material or concrete as directed by the Engineer-in-charge. Nothing extra shall be paid to the Contractor on account of this.

#### 1.4.4 Trial pits

Trial pits may be dug by the Contractor, without being directed to do so, along the lines of the trenches in advance of the excavations for the purpose of satisfying himself as to the location of underground obstructions or soil conditions. Nothing extra shall be paid on account of this.

#### 1.4.5 Slips and slides

The Contractor is responsible for proper protection of excavations made by him from any slips and slides. All slides and caving shall be handled, removed or corrected by the Contractor without any extra compensation at whatever time and under whatever circumstances they may occur. The excavations shall be made good and brought to necessary depth, width and levels without any extra cost. Special care should be taken to protect the safety of the workmen, staff and public or whoever at the site.

#### 1.4.6 Stacking of excavated material

The excavated material shall be stacked along the pipe alignment without any hindrance to the traffic and at least 600 mm away from the side of the trench. In case the excavated trench sides collapse or get refilled with excavated materials due to any reason whatsoever, the same shall be made good and brought the necessary depth, width and levels by the Contractor without any extra claim.

#### 1.4.7 Safety measures

Contractor shall take all safety majors to the works required, which shall include:

- (i).Barricading all sides of the open trenches.
- (ii).Red danger lights as can be easily visible from dusk to dawn at an interval of 20 m and at all the Road crossings.

- (iii). Traffic signals and display boards giving direction for diversion of traffic at the appropriate places as may be directed by the Engineer-in-charge.
- (iv). Adequately safe wooden plank / board or steel plate over the trenches at every 15 metres interval to facilitate crossing by the public residing on either side of the trench.
- (v). Round the clock watch and ward maintaining all safety regulations at the site of work and protecting the site from unauthorised intrusions.

#### 1.4.8 Progress of Excavation

The Contractor shall adjust excavation of trenches in such lengths that the pipes can be laid in such exposed portion of the trench within 3 days. Unless otherwise directed by the Engineer-in-charge, the following limitations for lengths of open trenches shall rule for a pipeline in one continuous reach;

Not more than 50 m in built up area and 150 m elsewhere shall be opened in advance of pipe laying

Not more than 50 m of pipeline left uncovered after pipe laying in built up areas and not more than 150 m else where

#### 1.4.9 Shoring and Bracing

The Contractor shall supply, fix and maintain necessary sheathing, shoring, strutting and bracing etc., in steel or wood, as may be required to support the sides of the excavation, to protect workmen in the trench and to prevent any trench movement which might in any way injure or delay the work, change the required width of the trench, make unsafe condition for adjacent pavements, utilities, buildings or other structures above or below ground.

Sheathing, shoring and bracing shall be withdrawn and removed as the backfilling is being done, except when the Engineer-in-charge may agree that such sheathing, shoring and bracing be left in place, at the Contractor's request. In any case, the Contractor shall cut off any such sheathing at least 600 mm below the surface and shall remove the cut off material from the trench.

All sheathing, shoring and bracing which is to be removed under the foregoing provisions shall be removed in a manner so as to not endanger the completed work or other structures, utilities or property, whether public or private.

#### 1.4.10 Excavation for Valve Chambers, Pipe Ducts and Other Appurtenant Structures

Excavation for Valve Chambers and other appurtenant structures shall be done in accordance with Standard Specifications followed by PWD department of Maharashtra State Government or the latest IS or as provided in MJP specification. The Contractor shall excavate as required for all the structures with foundations to firm, undisturbed earth up to the level of the underside of the structure. If the excavation is in rock, the Contractor shall excavate all rock at least to the minimum limits shown on the standard details for trenches and to the grade of the bottom of Valve Chambers and other structures as required. Where

the bottom of the structure is in rock, it should be ensured that no rock shall project above the lower surface of the concrete in such a manner so as to reduce the required thickness of concrete placed simultaneously as an integral part of the foundation and to the outside of structure foundation where structure is to be built. The Contractor shall excavate the trench / pit to provide necessary working space on all sides and for accommodating any sheathing, shoring or bracing etc.

#### 1.4.11 Unapproved excavation

All the unapproved excavation carried out beyond or below the lines and grades given in the construction drawings and specifications, together with the removal of such excavated materials, shall be at the Contractor's expense.

The excess space between the undisturbed bottom and sides of the excavation and the pipeline or other structures shall be refilled by the Contractor at his own expenses, with regular compacted bedding materials.

### 1.5 Control of Water

While pipeline and appurtenances are under construction, the Contractor, at his own expenses shall keep all excavation free of water. He shall provide all bunds, flumes or other works necessary to keep the excavation entirely clear of water, and shall provide and operate pumps or other suitable equipment of adequate capacity for de-watering the excavated trench/pit. For normal dewatering i.e bailing out water by manual means and diversions are included in excavation rate and no extra payment shall be made for such dewatering .Separate item of Dewatering is incorporated in the BOQ if dewatering is to be done by pumps.

Pipe bedding, laying, jointing and placing of the concrete or masonry shall be done in water free trench/pit and the trench/pit shall be kept dry enough until pipe joints, concrete and masonry are set and are resistant to water damage. The water shall be disposed off in a manner approved by the Engineer-in-charge.

All gutters, pipes, drains, conduits, culverts, catch basins, storm water inlets, ditches, creeks and other storm water drainage facilities shall be kept in operation or their flows be satisfactorily diverted and provided for during construction. The existing drainage facilities that are diverted shall be restored after the work to the satisfaction of the Engineer-in-charge. All costs for diverting surface water and restoring storm water facilities disturbed or damaged by the construction for keeping the excavation free of water during construction shall be included in the price bid for the various classes of excavation.

### 1.6 Overhead Wires and Poles

If the method of operation for the construction of pipelines requires removal and replacement or protection of any overhead wires or poles the Contractor shall make satisfactory arrangement for such work with the owners of such wires and poles. In this regard Employer will assist the Contractor in getting approval/permission. However the entire work will be the responsibility of the Contractor.

In case of alignment of the pipeline crossing the high tension electrical transmission lines belonging to the State authorities, the Contractor shall take all precautions necessary to see that the work is carried out with care and safety. If needed, the Contractor will contact the

authorities concerned and carry out all construction activities in such reaches in consultation with such authorities. If required the Engineer-in-charge will use his good offices with the concerned authorities to solve any dispute or differences in this regard. However the entire work will be the responsibility of the Contractor.

#### 1.7 Change of Trench Location

In case the Engineer-in-charge orders that the location of trench be moved to a reasonable distance from that shown on the drawings, on account of presence of obstruction or due to any other reason, the Contractor shall not be entitled to extra compensation or to a claim, provided the order to change is issued by the Engineer-in-charge before commencement of the excavation. If however, such change made at the order of the Engineer-in-charge involves the abandonment of excavation together with the necessary back fill, the same will be measured, classified and paid for in the same manner as other trench excavation and back fill of the same character.

#### 1.8 Allowable removal of pavement

Pavement and Road surfaces may be removed as a part of the trench excavation, and the amount removed shall depend upon the width of the trench specified for the installation of the pipe and the width and length of the pavement area required to be removed for laying of pipes. The width of the pavement removed along the normal trench for the installation of the pipe shall not exceed the width of the trench specified by more than 225 mm on each side of the trench. Wherever, in the opinion of the Engineer-in-charge, existing conditions make it necessary are advisable to remove the additional pavement, it shall be removed as directed by the Engineer-in-charge. Width of allowable removal of pavement may vary based on overlapping of excavation for other services and utilities which will be laid alongside the water line and Engineer in-Charge decision in this regards shall be final and binding on Contractor.

#### 1.9 Bedding for the pipe

Bedding shall be provided along the specified stretch of the pipeline, which differs based on the strata through which the pipeline passes. Pipe shall be generally laid on natural shaped sand bedding wherever rock / slush encountered, unless otherwise specified in BOQ item.

Where the pipeline crosses the Road under beneath and the pipe is likely to be subjected to damage from passing vehicles, concrete arch bedding or RCC Pipe encasement shall be carried out as directed by the Engineer.

#### 1.10 Backfilling of Trenches and around foundations of structures

##### 1.10.1 General

Pursuant to Clauses of this specification, the Contractor shall use selected surplus spoils from excavated materials for backfilling. All fill material shall be subject to Engineer-in-charge's approval and shall be conforming to Clauses of Bid Document, Standard Specifications for Procurement of Project Works. The excavated materials suitable for backfilling shall be stored not closer than 600 mm from the edge of the trench and shall not obstruct any public utilities or interfere with travel by local inhabitants or general public. Handling and storage of excavated materials must meet with the regulations of the Local Government Authorities. The detailed specifications for backfilling shall be as per Clause 8 of IS: 3114-1994.

### 1.10.2 Method of Backfilling

Trenches and excavated pits for structures shall be backfilled to original ground level or to such other levels, as the Engineer-in-charge may direct. All backfilling shall be carried out in orderly manner expeditiously and consistent with good workmanship.

Backfill material put into the trenches/pits for backfilling, shall unless otherwise specified be compacted and built up as to minimise future settlement as much as is reasonably possible. For this, care shall be exercised in selecting backfill material free from large hard clay lumps, especially in cramped areas directly adjoining the walls of structures.

Backfilling in trenches shall be done as pipe laying progresses, with the permission of the Engineer-in-charge, after the pipe or conduit is properly bedded, jointed and inspected and all measurements for the location of Junctions are properly recorded by the Engineer-in-charge and sufficient time is allowed for the joint materials or cement concrete or mortar to set. However the joints shall be left open for inspection during testing, which shall be backfilled after successful completion of testing, after obtaining permission from the Engineer-in-charge. Backfilling around and over the pipe, conduit, or structure shall be taken up uniformly on all sides and in the sequence and manner specified hereinafter, with care to avoid the displacement or damage to the pipe, conduit or structure. Trenches and pits should be carefully guarded till back filling.

For the purpose of backfilling, the depth of trench shall be divided into the following three zones measured from bottom to top of trench, as follows:

Zone A: From bottom of trench to the centre line of pipe,

Zone B: From the level of centre line of pipe to a level of 300 mm above the top of pipe,

Zone C: From a level of 300 mm above the top of pipe to the top of trench.

Backfilling in the trenches and around structures shall be carried out in horizontal layers of uniform thickness of not more than 150 mm when measured loose. As may be necessary to attain maximum compaction, the backfill material shall be moistened by sprinkling with water. After placing each layer of backfill material, the layer shall be thoroughly and uniformly compacted by means of mechanical plate vibrators or hand tampers. The compacting equipment and the manner of its use shall be subject to the approval of the Engineer-in-charge.

After the backfill material is placed in Zone A and Zone B as specified above, the remaining portion i.e., Zone C of the trench may be machine backfilled. Even in this case the backfill material shall be placed in uniform horizontal layers of not more than 150 mm thickness. Small pebbles of size less than 50 mm, if any, shall be so distributed throughout the mass, that all interstices are solidly filled with fine material. The backfill material shall be tamped with mechanical tamping equipment like plate vibrator, after moistening the backfill by sprinkling with water to obtain maximum compaction.

Machine backfill shall be so conducted that the material deposited in the trench shall not fall directly on top of the pipe from such a height as might result in damage to the pipe joints or

alignment.

If the trench is subjected to conditions, which might cause flotation of the pipe before sufficient backfill has been placed; the Contractor shall take the necessary precautions to prevent floatation of the pipe, conduit or structure.

Before final acceptance of the work, additional tamped earth shall be added to restore the settled trench surface to the required level of the adjacent earth surface or to the base of crushed rock wearing surface or to the finished earth base.

If from the excavated spoil, enough backfill material is not available, imported, selected and approved backfill material from the borrow pits is required to be placed for backfill, on approval of the Engineer-in-charge. Backfilling of trenches where the excavation is in the rock shall be with the surplus soft soil obtained from borrow pits. The availability of earth for this purpose, lead and lift should be verified by the Contractor while quoting the rates.

The earth backfill in the pavement portion shall be consolidated to 95% procter density.

#### 1.10.3 Disposal of Surplus Excavated Material

The excavated stuff remaining in balance after refilling and remaking of road shall be conveyed, unloaded and leveled by the contractor at a destination as directed by Engineer-in-charge. The same shall be paid to the contractor separately under relevant item in BOQ. For rate of conveying and disposing of the material, MJP SoR 18-19, Section C-(transportation), Lead Statement VI, Page No.30 shall be referred.

If it is seen that the surplus excavated stuff is being sold by the agency the agency will be penalized as decided by the Engineer-In-Charge.

#### 1.11 Measurement and Payment for Excavation

##### 1.11.1 For Excavation

The measurement for excavation shall be considering the allowable widths, depths with allowed side slopes (if any) for different classes of soils as per approved classification. The measurement for excavation shall be based on "neat line" dimensions as specified in the concerned drawing or Specifications, for different types of soils and depth of excavation. Should the nature of the soil permit the trench excavation with vertical sides or with side slopes at a slope steeper than specified in the drawing the actual "neat line" dimensions as excavated, shall be measured and paid.

The total volume of excavation shall be computed as above with measurement taken 30m intervals or at closer intervals if required by site conditions. The length of the trench shall be measured as per the actual length of pipes and fittings / specials laid at work site. The volume of excavation for structures like valve chambers, thrust blocks and anchor blocks etc., shall be computed and measured for payment as per the bottom area of the particular structure on outer periphery multiplied by the average depth between the level of the finished bottom of the structure and the original surface of the ground. The quantity shall be measured in cubic metres correct to two decimal places. The method of measurement for excavation for different classes of soils shall be as Clause 1.4.2. For measurement and payment of excavation, Clause No. 1.4.3 shall be referred along with Clause No.1.11.1

### 1.11.2 In Ordinary Soil and Soil Mixed with Disintegrated Rock and Soft Rock / Shale

Not used

### 1.11.3 For Excavation in Combination of All kinds of soil and Ordinary Rock

Not used

### 1.11.4 For Backfilling

Measurement of consolidated back filling shall be recorded and paid, deducting the space occupied by the pipeline and/or the permanent structure buried below the ground or any bedding in accordance with its dimensions indicated in the construction drawings from the total quantity of measurable and payable excavation. The surplus quantity of excavated earth shall be disposed off as specified in the BOQ. The quantity shall be measured in cubic meter correct to two decimal points.

### 1.11.5 Road Cutting

In Road cutting payment shall be made under respective excavation items provided in BOQ.

### 1.11.6 Restoration of Pavement

Measurement for restoration of damaged pavement shall be based on neat line dimensions as shown in the drawings and as measured at site. Rate quoted shall be inclusive of providing all materials and labour.

## 1.12 Contractor's Responsibility

### (a) Preparatory work

The contractor shall inspect the route along which the pipeline is proposed to be laid. He should observe/ find out the existing underground utilities/ construction and propose suitable alignment along which the pipeline is to be laid. He should make all efforts to keep the pipe as straight as possible with the help of ranging rods. Wherever there is need for change in direction, it should be done with the use of necessary specials or by deflection in pipe joints in case of Tyton joints (limited to 75% of permissible deflection as per manufacturer recommendation). The alignment as proposed should be marked on ground with a line of white chalk and got approved from Engineer-in-charge.

### (b) Pipeline Alignment

The alignments and location of specials, valves and chambers may be changed at site in co-ordination with and after approval of the Engineer-in-charge. The minimum soil cover to the top of the pipe crown shall be 1 m.

The Contractor shall be responsible for the adequate pumping, drainage and bailing out of water from the excavation. In case of failure to make such provisions or any other provisions, which may result in unsuitable sub-grade conditions, the Contractor shall replace and repair the sub-grade as directed to the satisfaction of the Engineer-in-charge, at his own cost and responsibility.

Should the Contractor select to use a gravel sub-grade to facilitate flow of water to pumps or other points of disposal, such gravel sub-grade shall not be measured or paid for as an extra item.

**(c) Trial pits**

Trial pits may be dug by the Contractor, without being directed to do so, along the lines of the trenches in advance of the excavations for the purpose of satisfying himself as to the location of underground obstructions, soil conditions or location of utilities. Nothing extra shall be paid on account of this.

**1.13 Ancillary Works**

Valve Chambers, Thrust Blocks, Anchor Blocks, Pipe Supports, Pipe Ducts, Pipe Encasing etc.

The Contractor shall build Valve Chambers, Thrust Blocks, Anchor Blocks, Pipe Supports, Pipe Ducts, Pipe bedding and such other miscellaneous structures that may be required at the locations shown by the Engineer-in-charge and as shown in the drawings or as may be otherwise specified or directed. The specifications of these ancillary structures shall generally be as specified in bid document or Standard Specifications followed by the State Government for similar Project Works, unless otherwise specified in this Section or advised by the Engineer-in-charge based on the site conditions.

The various structures shall be built as the pipe laying progresses and the Engineer-in-charge at his discretion, may stop work entirely on the laying of pipe or construction of other structures, until the construction of the structures already approved by the Engineer-in-charge are completed by the Contractor.

At the time of construction, in case of any deviation from the standard dimensions of the valve chambers shown in the drawings due to site conditions, the payment will be made on prorated basis after getting approval from the Engineer-in-charge.

**1.14 Pipe encasing**

Where pipes are laid below storm water drains / Nallahs and at Road crossings, the pipeline shall be encased / bedded as per the construction drawing. The encasement shall be of RCC / PCC as directed by the Engineer.

**1.15 Thrust Blocks and Anchor Blocks**

Thrust blocks shall be provided for both horizontal and vertical bends wherever required in the pipeline to effectively transfer the hydrostatic thrust developed to the surrounding ground. They shall be constructed at the locations shown in the drawings and are of the respective dimensions shown therein depending on the angle of the bends, and the pressures developed in the main. Anchor blocks shall be provided for gradients steeper than 16%. All the thrust blocks and anchor blocks are of M20 grade concrete. These shall be constructed as per Standard Specifications followed by State Government for the similar works or the latest IS. The surrounding virgin land of the thrust blocks shall not be disturbed, to effectively transfer the thrust developed in the main. The Contractor should make his own arrangement for any dewatering or bailing out of water.



#### 1.16 Valve chambers

RCC valve chambers with MS plate on top and RCC raft slab at bottom shall be provided for all Air valves, Sluice Valves etc. of various sizes above 250mm diameter.

For Valves below 250mm diameter sizes, CI surface box (IS:3950) shall be embedded while casting the top slab. For narrow Roads, valve chambers for below 150mm dia sluice valves, CI surface box chamber shall be constructed as per relevant IS code and as directed by engineer in charge.

Pipe supports shall be of saddle type. Pipe supports shall also be provided for the stretches of the pipe, where the pipe is to be gradually brought above the ground for crossing any obstructions and as directed by the Engineer. There shall be no joints at the location of the pipe supports. The joints shall be located on any one side of the support, at a minimum distance of 200 mm from the face of the support.

Pipelines crossing over the Nalla shall be encased with RCC and as directed by the Engineer-in-charge.

#### 1.17 Structures for Crossing Canal/Nallahs and Other Miscellaneous Structures

Structures for crossing the pipeline over canal / nallahs and other miscellaneous structures not listed in these specifications, but may be required to be built shall be as per construction drawings and as described in the Bill of Quantities. The materials of construction and workmanship for these structures shall conform to the relevant Standard Specifications followed by State Government for the similar works. The measurement of quantities involved in these structures for payment shall be done as per dimensions of the respective drawings.

#### 1.18 Valves

##### 1.18.1 General

The Contractor shall provide required number of suitable valves at the locations shown in the drawings. Any valves required to be provided extra, at the locations shown by the Engineer-in-charge, shall be provided by the Contractor, for which payment shall be made at the quoted rates.

The valves shall be manufactured and supplied for the work generally as per manufacturer's specifications adhering to relevant IS specifications and basic parameters indicated hereinafter. The bidder shall furnish along with his bid the detailed specifications of the respective valves mentioned hereunder for evaluation. All valves shall be fixed at the required locations with necessary specials like Tee's, tail pieces, Puddle flanges, scour Tee's bends, dismantling joints etc., with bolts, nuts, washers, gaskets etc., complete and provided with cement concrete supports. All valves shall be supplied to site along with manufacturer's test certificates.

##### 1.18.2 Kinetic Air Valve

Kinetic type double orifice type air valves shall conform to IS: 14845 (with latest amendments). Kinetic air valve shall be provided for the crest portions of the pipe alignment, at the locations shown in the drawings. Size of the air valves shall be 80 mm dia or as specified by the Engineer-in-charge. The Kinetic Air Valves shall be double orifice Air Valves having separate low and high pressure chambers sealed off separately by sealing elements.

A separate isolating sluice valve, conforming to IS: 14846, fitted with a pair of bevel gearing, shall be suitably mounted on a bracket for easy operation through a tee with short pipe as directed by the Engineer-in-charge.

The valve shall be suitable for pressure rating as specified with built-in kinetic feature. The large orifice of the valve shall always remain open irrespective of discharged air velocity, even in worst possible condition and shall sit off only when the last trace of air is expelled from the pipeline. Air valves shall be connected to the pipeline by means of flanged connections.

These valves shall be of pressure rating as indicated below.

The specifications for the Kinetic Air Valves are:

Type	:	Kinetic Double orifice with a isolating sluice valve
Working Pressure	:	10 kg/cm <sup>2</sup>
Size	:	80 mm
Manufacturers	:	Confirming to BIS standards

### 1.18.3 Sluice Valve

Sluice valves shall be provided for isolating the sections of the pipelines and in the valley portions of the alignment for scouring, at the locations shown in the drawings. These sluice valves shall be of respective sizes as mentioned in the Section 6 of this Bid Document and as shown in the drawings. The valves shall be of double flanged type, which will be installed on the pipe by flanged joints and with a dismantling joint wherever required as directed by the Engineer-in-charge. Flanges of the valve shall be drilled to conform IS: 1538. The sluice valve shall be suitable for handling the treated water and generally conform to IS: 14846. The valves shall be of non-rising spindle type and close in the clockwise direction. The direction of closing shall be marked on the hand wheel.

The sluice valves used as scour valves shall have a special scour tee with flanged joints. The design and locations of scour valves are shown on the drawings. The Engineer-in-charge with regard to topography shall determine exact positioning. At least 3m length of the washout pipe, inclusive of the isolating valve, measured from the centre line of the pipeline including tee with vertical pipe and semi-circular bend as shown in the drawing, shall be laid at the same time as the pipeline and suitably capped to prevent ingress of foreign material. The minimum gradient for the scour valve pipe shall be 1 in 100, if not shown in drawings.

The specifications for the sluice valves are:

Type	:	Non-Rising Spindle
Working Pressure	:	10 kg/cm <sup>2</sup>
Size	:	100mm, 150 mm, 200mm, 300mm & 350 mm and above as required
Operation	:	Manual
Material of construction Body, Bonnets, Wedge	:	SS 416

Spindle : SS 416  
Stem Nut : High Tensile Brass  
Manufacturers : Confirming to BIS standards

#### 1.18.4 Marking, testing and inspection of Valves

The direction of rotation for OPEN, CLOSE position shall be marked on the hand wheel and on the bonnet of the valve. All the valves shall be inspected for flaw detection test in accordance with IS: 780 for sizes from 50 mm to 300 mm and IS: 2906 for sizes from 350 mm to 600mm.

#### 1.18.5 Measurement of Valves, Hydrants and Bulk Water Meters

The valves, hydrants and Bulk water meters shall be measured in Numbers for the finished work inclusive of necessary specials required to complete the work as shown in drawings and as directed by the Engineer-in-charge. Joints and specials will not be measured separately and no separate payment will be made for the same.

#### 1.18.6 Dismantling joints

Double flanged Dismantling joints shall be of DI as per relevant / latest IS. Dismantling joints shall be suitable for installation with all valves of diameters of 300 mm and above. These shall be for working pressures of 10 kg/cm<sup>2</sup> (1 Mpa) and shall be completely leak proof with proper gasket arrangement. . These joints may also be used if required for closing the field test gaps. No extra cost is paid for this work.

#### 1.18.7 Service Connections and repair to damaged water connections

One Service Connection means one tapping from a distribution main including one saddle, ferrule/ saddle service pipe from tapping point to the existing service pipeline of the property including its inter-connection. End plug shall be provided wherever there is no existing service pipeline but connection is anticipated in future. House service connections shall be carried out as per items of BOQ and drawings. Contractor shall be paid for repairing to damaged water connections other than the damaged happened due to negligence of contractor while carrying out the works. The BOQ item provides the rate for 32 dia M.D.P.E pipe rate with specials and required labours. For change in diameter , contractor shall be paid with rate of pipe of actual diameter used for repairing.

#### 1.18.8 House Service Connections

The house connection using MDPE pipe and brass ferrule shall consist of the following.

#### **Items for House service connections**

#### **House Service Connections from proposed pipelines under this contract package**

House Service Connection in M.D.P.E. (PE 100, PN 16) pipe (Single service connection) from main header to property limit, including supply and fixing of brass ferrule conforming to IS2692, all specials, clamp saddle of non-corrosive engineering plastic (Polyethylene) body moulded with Stainless steel threaded metal insert for tapping outlet, and drilling the main pipeline shall be through the chain and ratchet mechanism and the drill hole shall be perpendicular to the axis of the main pipeline, including excavation, refilling trenches, tools and tackels, etc. complete as directed by engineer in charge.

### 1.19 Field Hydrostatic Test

The Sectional Hydraulic Test shall be carried out after the pipeline section to be tested has been laid jointed and backfilled to a depth sufficient to prevent floatation, but leaving the joints exposed which have not been tested. The sections to be tested shall be to the approval of the Engineer-in-charge and shall not be longer than 500 m. The joints between each tested section shall be left exposed until the pipeline has passed the test on Completion.

Each length of the pipeline to be tested shall be capped or blanked off at each end and securely strutted or restrained to withstand the forces, which will be exerted when the test pressure is applied. Testing against closed valves will not be permitted. Washout valves shall be fitted with blank flanges and these together with in-line valves shall be left open. Air valves already fitted shall be permitted to function during the test.

Proposals for testing where thrusts on structures are involved, even where thrust flanges on the piping are installed, shall be submitted with the calculations of the forces to be carried, to the Engineer-in-charge for approval.

The method of filling the pipeline with water shall be approved by the Engineer-in-charge. The length under test shall be filled making certain that all air is displaced through an air valve installed at the top of the blank flange situated at the high end of the line. The length shall then remain under constant moderate pressure of 10 to 20m head for a period of several hours until the pressure can be maintained without additional pumping.

The pressure shall then be slowly increased at a maximum rate of 1 bar per minute to the full test pressure and pumping discontinued for 3 hours or until the pressure has dropped by 10m, whichever occurs earlier. Thereafter pumping shall be resumed and continued until the test pressure has been restored. The quantity of water pumped to restore the pressure shall be the measure of leakage from discontinuation of pumping until its resumption.

Notwithstanding the satisfactory completion of the hydraulic test, if there is any visible leakage of water from any pipe or joint the Contractor shall, at his own cost, replace the pipe, repair the pipe or re-make the joint and repeat the hydraulic test to the satisfaction of the Engineer-in-charge. The Contractor should assess the availability of water before quoting the rates.

The Test on Completion shall be carried out after all the pipeline sections have been satisfactorily tested and the joints between each section completed to provide a continuous test length between contact interfaces.

Pipelines shall be tested as above except where the Engineer-in-charge issues such instructions as are necessary for testing parts of the Works that have been designed for stresses limited by considerations other than those applying to the pipeline systems.

Test pressures are to be measured in kg/cm<sup>2</sup> at the centre of the blank flange situated at the lowest end of the pipeline under test. Unless otherwise specified the test pressure shall be as stated below.

DI pipes and Fittings

Factory Test Pressure : as per IS 8329

Field Test Pressure : as per CPHEEO, MoUD.

## 1.20 Civil Works

### 1.20.1 Site Clearance and rough grading

Before the start of the works, the entire site shall be cleared of all bushes, shrubs, jungle and unwanted vegetation growth etc., and made clean. The rubbish shall be disposed off as directed by the Engineer-in-charge. After the site is cleared, it shall be roughly graded to even out any undulations or ditches present therein.

### 1.20.2 Materials

All materials used in the work shall be subjected to mandatory tests in accordance with relevant IS codes. Before incorporating the materials in the permanent Works, test reports shall be submitted to the Engineer-in-charge for seeking his permission. All materials shall confirm to QA & QC manual specified by the Employer or relevant IS / ISO.

### 1.20.3 Form Work

Formwork, shuttering, centering, scaffolding etc. shall be of steel plates or plywood, lined with MS-sheets and for scaffolding steel tubular shall be used. Joints should be sufficiently tied to prevent loss of cement slurry from the concrete. All forms, shuttering shall be levelled, aligned, and thoroughly cleaned, before they are used for concreting.

Formwork shall be removed after specified days of curing with the prior written permission of the Engineer-in-charge. The surface of RCC after removal of formwork / shuttering shall be smooth, even and without honeycombing or undulations.

### 1.20.4 Reinforced Cement Concrete Work

The aggregates and cement shall be proportioned by weight based on design mix only. The mixing shall always be carried out in mechanical mixer and in such a way so as to avoid any loss of water or cement. No hand mixed concrete will be allowed. It should be conveyed, placed in position and compacted by suitable type of mechanical vibrator, as rapidly as practicable but in no case the time of compaction after mixing shall increase 30 minutes. Standby concrete mixer and vibrator shall be available at site.

Ordinary Portland Cement (OPC) conforming to IS: 8112 / Portland-Pozzolana Cement (PPC) conforming to IS: 1489 mark shall be used. Cement manufactured in mini-cement plants shall not be used.

All reinforcement used shall be of TMT steel (Fe 415) from approved manufacturers and shall be clean and free from loose mill scales, rust and coating of oil or other coatings which may destroy or reduce bond. Minimum size of reinforcement bars shall be of 8 mm.

Steel / Plywood shuttering shall be used. Shuttering shall be new or in a good condition without holes or dents, and to be approved by the Engineer-in-charge. The individual elements of shuttering shall be in the correct shape to ensure a gap free shuttering. Suitable systems have to be provided for keeping the shuttering in place and keeping the correct

distance in case of walls.

The construction joints should be minimum and these have to be executed with utmost care. Before concreting on joint loose material has to be removed and they have to be cleaned properly. Honeycombing has to be avoided by suitable fixing of shuttering and proper use of vibrators.

The exposed surfaces of concrete shall be kept continuously in a wet condition by ponding or covering with a layer of sackings, canvas, hessian or similar materials and kept continuously wet for at least 21 days from the date of placing of concrete.

To obtain dense concrete and to reduce chance of honey combing adequate vibrating and compacting shall be ensured.

RCC grade shall be as specified in the Drawings or Price Bid / Bill of Quantities. In case of any difference in the drawings and Bill of Quantities Engineer-in-charge's decision will be final.

#### 1.21 Road restoration

Contractor shall restore the roads excavated for trenches for laying the pipe lines, constructing chambers and structures etc. The estimated width of restoration shall be for the limit of allowable removal of pavement as per Clause 1.8. The width of the pavement restoration along the normal trench for the installation of the pipe shall not exceed the width of the trench specified by more than 225 mm on each side of the trench. The width of trench for laying of pipeline shall be  $D+0.6m$ , where D is the outer diameter of the Pipe. It is expressly clarified here the excavation for laying the other services will be done alongside the water pipe line and trench for laying the water pipeline and restoration may overlap with restoration required for other trenches i.e for sewerage, storm water, utility duct etc. Contractors shall co-ordinate with other agencies and Engineer in-Charge and plan the sequence of road restoration required for different items under this contract or sequence and extent of restoration required depending on the works undertaken by other agencies. Engineer in-Charge decision in this regards shall be final and binding on Contractor. The Bill of Quantities of road restoration for trenches water supply line are provided for average width of 1.25m (including trench). However as clarified above, in the event, trench for water supply overlaps with other trenches, the measurement for restoration shall be recorded deducting the overlapping width depending on the site condition. Furthermore it is assumed in the estimate that restoration of 70 % of road shall be done by bituminous pavement and 30 % of road shall be done in concrete pavement.

The estimated quantities of road restoration may change due to overlapping of trenches, actual percentage of pavement type during execution however variation in rate shall not be applicable for change in quantities due to any reason.

##### 1.21.1 Bituminous Roads

Reinstating the cut asphalt Road by providing, laying, spreading and compacting the following works.

1. Subgrade - Construction of subgrade and earthen shoulders( Construction of subgrade and earthen shoulders with approved materials obtained from borrow pits with all

lifts and leads , transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2).Spec. No. MORTH -305 -

Sub grade will be provided within trench width with material suitable as specified above. Thickness of sub grade shall be 500 mm.

2. Construction of Granular Sub-Base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader / Paver on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401 -- Plant Mix Method and Grading - II Material. Thickness of Granular Sub Base (GSB) shall be 150 mm

3. Wet Mix Macadam -- Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. Laying By Grader/Paver. Thickness of Wet mix Macadam (WMM) shall be 250 mm

4. DENSE BITUMINOUS MACADAM:--Providing and laying dense bituminous macadam using crushed aggregate of grading 2, premixed with bituminous binder, @ 4.50 % by weight of total mix and filler, transported at site with VTS, laid over a previously prepared surface , finished to the required grade ,level, alignment, and rolling to achieve the desired density for 50/75 mm compacted thickness with drum mix type hot mix plant with SCADA having complying essential features of Hot mix plant as per IRC-27-2009 specified conditions and attachments such as electronic load sensor based belt conveyers, automatic synchronization of bitumen and aggregate feeder, built in dust controller system and PLC for Drum Mix plant ,Sensor paver, and Vibratory roller excluding prime/Tack coat etc. complete -- Bitumen VG-30/VG 40 grade with stone dust. Compacted thickness of Dense Bituminous Macadam (DBM) shall be 60 mm.

5. BITUMINOUS CONCRETE:--Providing and laying bituminous concrete using crushed aggregate of grading 2, premixed with bituminous binder @5.4% by weight of total mix and filler, transported at site with VTS, laid over a previously prepared surface, finished to the required grade ,level, alignment, and rolling to achieve the desired density for 30/40 mm compacted thickness with drum mix plant with SCADA, Sensor paver and Vibratory roller excluding prime/Tack coat etc. complete -- Bitumen VG-30/VG 40 grade with stone dust filler. Compacted thickness of Bituminous Concrete (BC) shall be 40 mm.

6. Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.25 kg/sqm on the prepared bituminous/granular surface cleaned with mechanical broom. etc. complete.( Spec. No. MORTH-503)

7. Providing and applying primer coat with bitumen emulsion on prepared surface of granular base including clearing of road surface and spraying, primer at the rate of 0.6 Kg/sqm using Mechanical means. Etc. complete (Spec. No. MORTH 502)

The contractor will ensure that the entire work along with all its installations is in a finished and in new and fully operative condition when handed over. He shall have repaired and

remove all signs of damage that might have been done during the course of installation and fixing of equipment. He shall also see that the entire exterior has been finished properly and the entire site is cleared of all extra construction material, debris, and excavated soil. This shall have to be done to the satisfaction of the Engineer-in-charge in Charge. If any item not mentioned but required for satisfactory completion & commissioning, same will have to be carried out without extra claims.

The Contractor shall restore the Road after laying, jointing and testing of pipeline without giving scope to delay in Road restoration. For smooth flow of traffic / pedestrian, the cut Roads shall be restored upto granular sub base excluding bituminous work. After proper rolling and clearance obtained by the Engineer-in-charge, laying of bituminous surface shall be carried out. In case the Contractor keeps the Roads un restored more for than 1Km and fails to restore the Roads on temporary and emergency basis then pipe laying shall not be allowed further and delay will be attributable to Contractor, appropriate penalty shall be imposed for delay in Road restoration and pipe laying work etc. Payment will be made to the contractor for the restoration of Roads as per the relevant Items of BOQ.

#### 1.21.2 Concrete Roads

Contractor shall restore the concrete roads with following specification:

1. Subgrade - Construction of subgrade and earthen shoulders( Construction of subgrade and earthen shoulders with approved materials obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2).Spec. No. MORTH -305 -

Sub grade will be provided within trench width with material suitable as specified above. Thickness of sub grade shall be 500 mm

2. Construction of Granular Sub-Base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader / Paver on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401 -- Plant Mix Method and Grading - II Material. Thickness of Granular Sub Base (GSB) shall be 150 mm

3. Construction of dry lean cement concrete Sub- base over aprepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, , cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant/ Weigh batch mixer, transported to site with all leads and lifts, laid with a paver with electronic sensor /by suitable means as approved by Engineer in-charge, compacting with vibratory roller, finishing, curing and including preparation of sub-grade surface if required etc. complete. Thickness of Dry Lean Cement Concrete (DLC) shall be 100 mm.

4. Providing and laying in-situ M40 Grade unreinforced plain cement concrete pavement over a prepared sub base with 43 grade cement ,coarse and fine aggregate conforming to IS 383, using fine and coarse aggregates combined gradation as per Table 600-3 of MORTH Specification 2013, mixed in a batching and mixing plant/ non tilting mixer and Weigh batcher as per approved mix design, admixtures, transporting to site, spreading, laying with approved make paver, compacted and finished in a



continuous operation, finishing to lines and grades as directed by Engineer-in-charge and curing by curing compound /by providing cement vata in cement Mortar 1:8 @0.6m X 0.6m centre to centre, admeasuring 80 mm at bottom and 40 mm at top with depth of 75mm and maintaining the same throughout curing period . Thickness of Pavement Quality Concrete (PQC) shall be 280 mm.

#### 1.22 Cutting of Pipes

Cutting of existing DI/CI/MS/AC/PVC/RCC pipes which are already laid underground for all diameters including inter-connection to new DI pipe with CI/MS/DI detachable joints including cost of Tees, Reducers, bends, CI detachable joints, jointing materials, excavation, refilling etc., shall have to be carried out as directed by the Engineer. The dismantled material of pipes, joints shall have to be cleaned and transported including loading unloading, carting and stacking in the store of the Line Agency. If the material is not deposited then the amount decided by the engineer in charge will be deducted from the bill.

#### 1.23 Final Finishing

The contractor will ensure that the entire work along with all its installations is in a finished and in new and fully operative condition when handed over. He shall have repaired and remove all signs of damage that might have been done during the course of installation and fixing of equipment. He shall also see that the entire exterior has been finished properly and the entire site is cleared of all extra construction material, debris, and excavated soil. This shall have to be done to the satisfaction of the Engineer in Charge. If any item not mentioned but required for satisfactory completion & commissioning, same will have to be carried out without extra claims.

#### 1.24 Disinfection of Laid Pipelines

The tested and commissioned water supply pipelines shall be disinfected as per IS:12288 (with latest amendment) by flushing the pipelines and cleaning the same with fresh water. This operation shall be repeated three times including getting the sample of water from the disinfected main tested in the laboratory before supply to the consumers. The costs involved in the disinfection of pipelines including cost of water with lead and lift charges, chemicals, water sample testing, labour, etc., complete shall be deemed to be included in the quoted rates. Disinfection of earlier laid (Partial completed network) pipelines shall also be carried out by the contractor with no extra payment.

#### 1.25 Commissioning

After satisfactory testing of the entire pipelines, the pipelines shall be commissioned for operation which shall be certified by the Engineer-in-charge. Commissioning of earlier laid (Partial completed network) pipelines shall also be carried out by the contractor with no extra payment.

#### 1.26 Defect Liability

During the period of defect liability, the Contractor shall maintain minimum number of men, material, and equipment at site as approved by the Engineer-in-charge for timely maintenance and correction of defects.

#### 1.27 As Built Drawings

On completion of the works the contractor shall submit to the Engineer-in-charge actual "Completion Drawings" as specified below and operation and maintenance instructions/

manuals for the whole of the Work. These Drawings shall be accurate and correct in all respects and shall be shown to and approved by the Engineer-in-charge.

Completion Drawings as below on two prints and one polyester film shall be supplied by the contractor, along with a soft copy in CD. These drawings shall be developed in Auto CAD-2000. Drawing shall be of standard size as below.

i) Plan showing Distribution Network in package area on scale as specified by Engineer-in-charge showing valves, specials, appurtenances, sizes and material of pipe.

ii) Structural Drawing showing reinforcement details of all the components covered under this contract as specified by Engineer-in-charge.

iii) As Built drawings shall be super imposed with earlier laid pipeline / valves / Fire Hydrants details and necessary details may be obtained from the Employer.

After the partial testing and commissioning of Works the draft Completion/ As built drawings shall be submitted by the contractor to the Engineer-in-charge. However this will not absolve his responsibility to submit final completion drawings on full commissioning.

## 1.28 Technical Specifications of Equipment and Materials

### 1.28.1 General

Bidders have to include detailed information on all proposed equipment and materials in their bid. All proposed equipment and materials have to be in accordance with the specifications below or equivalent international standard. All miscellaneous equipment and materials not listed hereunder shall be of similarly high quality. Should the contractor want to use other equipment/materials than the ones included in the bid, such equipment/materials must also meet the minimum specifications below and may only be used subject to the Engineer-in-charge's approval.

### 1.28.2 Pipes

#### **1.28.2.1 Main Pipes**

##### Ductile Iron Pipes

- Pipes in accordance with [ISO 2531-1988-K7/K9 PN10]
- Sulphate resistant blast furnace cement lining as per [ISO 4179-2005 ]
- Outside corrosion protection: zinc layer and bituminous coating, as per [ISO 8179-2004]
- Rubber joints in accordance with [ISO 4633-2002]
- Automatic flexible push in joints [TYTON] or [STANDARD]HDPE pipes
- According to ISO 4984:1995 PN8, PE100
- Color: black
- Name of producer, type, pressure and production date shall be marked on every pipe; if pipes are specifically manufactured for this project the word CLIENT shall be added to the other information

#### **1.28.2.2 Service Connections**

Medium-Density Polyethylene (MDPE) Pipes shall be according to ISO 4427-1996, , and shall be suitable and approved for the use with potable water at a working pressure of min. PN 10. The pipes shall be resistant against UV-radiation and shall have blue colour. Name of producer, type, pressure and production date shall be marked on every pipe.

#### **1.28.2.3 Pipe Fittings and Appurtenances**

Flanges of all valves and other appurtenances supplied under this project shall be drilled according to ISO 7005-2-1988 PN 10.

All bolts, nuts and washers used under this project shall be stainless steel 304.

#### **1.28.2.4 Sluice Valves**

Resilient seated sluice valves shall be in general according to ISO 7259-1988, double flanged if not otherwise required; with face to face dimensions to EN 558-1 GR 14-short (DIN 3202-F4) and flange dimensions and drilling to ISO 7005-2-1988 PN 10 and shall be suitable for a nominal working pressure of 10 bar.

Body and bonnet shall be of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693) and shall be inside and outside epoxy powder coated with a minimum coating thickness (DFT) of 250 µm in accordance to DIN 30677-2 and DIN 3476.

The wedge shall be of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), fully vulcanized with EPDM or NBR (suitable and approved for potable water), with drain hole and special wedge guiding system with high gliding features to guarantee low operation torques. Wedge nut shall be of bronze and flexibly fixed in the rubberized wedge.

Spindle shall be of the non-rising type and shall be made of stainless steel 304 (X20Cr13) with a rolled thread and shall be polished in the sealing areas. Sealing shall be of the multiple O-ring sealing system. O-rings shall be embedded in non-corrosive material to DIN 3547. Valves from DN 250 mm upwards shall have additionally axial roller bearings in the bonnet to reduce operation torques.

All bolts/nuts shall be additionally sealed to avoid corrosion. Sealing gaskets between body and bonnet shall be embedded in the casting. An additional spindle sealing gasket shall be placed at the top of the bonnet to protect the spindle against friction due to dust and soil from outside.

All resilient seated gate valves that will be used for underground installation and shall be supplied, with extension spindle consisting of galvanized steel rod, spindle adaptor and operating cap and protecting tube of plastic material.

#### **1.28.2.5 Pipe saddles**

##### **Pipe saddles for non-metallic pipes**

Pipe saddles for use on plastic pipes shall be of the full collar type with a minimum length of 120 mm to support the plastic pipe and with a fully rubber lined sealing area around the full circle with multiple O-rings or multiple lip seals around the outlet.

- i. The outlet of the saddle shall be female thread and specially protected either by a rubber ring or by a special coating to avoid corrosion and incrustation on the blank thread.
- ii. The body of the pipe saddle shall be made from ductile iron EN-GJS-400-15 acc. to EN 1563 (GGG 400 DIN 1693) for a nominal working pressure of 10 bar and shall be inside and outside epoxy powder coated with a minimum coating thickness (DFT) of 250 µm in accordance to DIN 30677-2 and DIN 3476.
- iii. Stud bolts with nuts and washers and shall be made of stainless steel 304, gaskets shall be of EPDM or NBR (suitable and approved for potable water).

#### **Pipe saddles for metallic pipes**

- i. Pipe saddles shall be of the universal type with flexible strap for DI, steel and AC pipes and shall be suitable and approved for the use with potable water at a nominal working pressure of 10 bar.
- ii. The outlet of the saddle shall be female thread and specially protected either by a rubber ring or by a special coating to avoid corrosion and incrustation on the blank thread.
- iii. The body of the pipe saddle shall be of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 DIN 1693), inside and outside epoxy powder coated with a minimum coating thickness (DFT) of 250 µm in accordance to DIN 30677-2 and DIN 3476.

Saddle strap and bolts/nuts/washers shall be made of stainless steel 304. Strap shall be rubber lined to avoid direct contact between the stainless steel strap and the pipe. Gaskets shall be of EPDM or NBR (suitable and approved for potable water).

#### **Above ground instrumentation box**

Fiber-reinforced plastic (FRP) cabinet spacious enough to enclose the electromagnetic flow meter converter, PRV controllers, data logger and accessories. It must be pad mounted in concrete pedestal for ease access and protected inside a > 4 mm φ wire mesh cage and secured by weather proof durable padlock.

### **1.29 Part B-8: Technical Specifications for Installation**

#### **1.29.1 General**

The list below is a non-exhaustive list given the diversity and complexity of the project.

Wherever no specific works and installation specifications are listed below, CLIENT's internal specifications shall be followed. The Contractor is furthermore expected to execute all works in accordance with international best practice and of course in accordance with all relevant COUNTRY regulations and norms. The Contractor is required to take digital photos of all stages of the work progress. Detailed instructions will be given by the Engineer-in-charge. All old pipes, valves and other appurtenances shall be returned to the Employer unless otherwise instructed by the Engineer-in-charge.

#### **1.29.1.1 Pipeline Trenches**

##### **Trench Width**

Trench widths shall be as per Clause 1.4.3 in this section.

##### **Start of Excavation**

Where a trench is excavated in a paved surface, whether of asphalt, concrete, or other

material, the Contractor shall start by carefully cutting through the paved surface and foundation along the lines of the trench, without loosening or damaging the adjacent parts.

### **Trench Cross Section**

The trench sides shall be excavated as follows unless specifically varied by the Engineer-in-charge:

- a) With stable soil conditions: vertical sides.
- b) With soil of low stability: the excavation faces shall be supported by shoring or sheet piling. Additional trench width shall be included to allow proper tamping of backfill and the placing or removal of piles or shoring.
- c) Trench depth shall permit the pipe to be laid to the gradients and elevations shown on the Drawings.
- d) At pipe joints, additional excavation shall be made for the pipe joints.

e) Pipeline depth shall be in accordance with the Employer's standard specifications.

### **Length of Trench Left Open**

The trench open ahead of pipe laying operations shall be limited to the length of pipe which can be laid in one day except as otherwise authorized by the Engineer-in-charge.

If natural or artificial conditions create hazardous operations in the performance of excavation, the Engineer-in-charge may specify further limitation in the length of open trench permitted.

The Contractor shall ensure that safety measures with respect to open trenches will be provided to the satisfaction of the Engineer-in-charge.

## **1.29.1.2 Reinstatement of Surfaces**

### **Temporary Reinstatement**

After backfilling the pipeline trench up to the level shown on the Drawings or as directed by the Engineer-in-charge, the Contractor shall install and compact temporary Road surface reinstatement. To accommodate settlement, temporary surface materials shall be to the same standard as the Road specifications. The Contractor shall maintain the reinstatement and top restore additional material as necessary, to accommodate settlement for a period of not less than two months. No payment shall be made for temporary restoration of roads.

### **Permanent Reinstatement**

Permanent reinstatement of Roads and pavements shall restore them to their original condition. The permanent reinstatement shall be carried out in accordance with the specifications provided under Clause 1.21 and requirements of the Road specification provided in separate section .

## **1.29.1.3 Pipeline Installation**

### **General**

The Contractor shall provide labor, materials, tools, equipment, and plant for the installation

and handing, laying and installation of the pipes and fittings to the lines, grades and elevations shown on the Drawings.

### **Pipes to be Clean**

Pipes and fittings shall be carefully cleaned of foreign substances which may have been collected therein before installation and kept clean at all times thereafter, to ensure that there is no difficulty later with flushing and sterilization of the pipe lines on completion.

Before leaving the work for the night or for holidays or at other times when pipe installation is to stop, all pipeline ends shall be closed with suitable wood or metal bulkheads to prevent ingress of animals or persons. The Contractor shall make all necessary arrangements to maintain dewatering pumps in operation so that the pipeline does not fill with dirty water.

The Contractor shall be deemed responsible for any delays caused to its installation program arising from its failure to keep the interior of the pipes clean.

### **Inspection of Pipe at Trench Site**

Each length of pipe shall be carefully examined before it is lowered into its laying position to ensure that only new undamaged pipe shall be installed following the approval of the Engineer-in-charge. Any pipes found damaged shall be rejected and removed from the Site for repair, cutting off the damaged portion if short, or disposal, subject to the opinion of the Engineer-in-charge.

### **Pipe Cutting**

Cutting of pipes shall be carried out in accordance with the pipe manufacture's recommendations, without damage to the pipe or the protective coating, and so as to leave a smooth face normal to the pipe axis, chamfered as necessary for subsequent jointing.

All cutting shall be done with proper cutting tools and apparatus, and the Contractor shall always be responsible for the accuracy of the measurement of the cut pipe required.

With ductile iron pipes, the cut ends shall be coated with quick drying epoxy paint to the approval of the Engineer-in-charge which shall be dry before the joint is made.

The Contractor shall remove all unused offcuts from the site on completion, and return them to the Employer's stores. Such offcuts shall be set against the Contractor losses, provided the offcuts did not arise from the repair of damaged pipes.

### **Pipe Bedding**

Bedding shall form a continuous, sound and uniform bearing for the full length of the pipe except for small grooves for removal of sling, and at the ends of joint.

All such grooves shall be filled and thoroughly compacted with bedding material after removal of the sling and completion of jointing.

### **Pipe Installation**

Pipes shall be carefully lowered into the trench.

The bedding shall have been prepared and compacted to the required line and level, so that the pipe will be lowered directly onto the bedding. Temporary supports on blocks will not be permitted.

Larger pipes should be supported by the crane during jointing to reduce the jointing effort.

### **Flotation**

The Contractor shall take all precautions necessary to prevent pipes from floating due to accidental flooding or from any other cause, and shall be responsible for the consequential cost of remedial work delays.

The Contractor shall include details of precautionary methods proposed for pipe restraint with his method statements for the execution of the work.

### **Jointing**

#### **a. Spigot and Socket Type**

The spigot and socket to be joined shall be thoroughly cleaned just before joining and the joint rubber gasket and lubricant supplied by the manufacturer shall be installed and applied in accordance with the manufacturers' recommendations. The joint lubricant to be used must be suitable for potable water. When a joint deflection is needed to accommodate a grade or an alignment adjustment, the deflection should be made only when the joint has been made as described above. The amount of the joint deflection must not exceed the limits imposed by the design or recommended by the manufacturer.

#### **b. Mechanical Couplings**

In the case of mechanical couplings the bolts shall be tightened gradually so that the components of the coupling are drawn together uniformly. The manufacturer's recommendation shall be followed.

#### **c. Flanged joints**

Flanged joints shall be completed in like manner, and in accordance with the manufacturer's recommendations as regards maximum torque applied to bolts.

#### **d. Valves**

Valves in the Ground

DN 250mm and smaller valves shall be placed directly in the ground when not installed in chambers with larger valves. The valves are provided with surface boxes and protection tubes, and shall be installed, and supported on a concrete block.

Valves in chambers

Valves for installation in chambers shall be hand-wheel operated and installed.

### **Thrust Blocks and Restraints**

Bends, plugged ends, tees and tapers shall be well braced against undisturbed earth by the use of concrete thrust blocks.

### **External protection of joints**

Mechanical couplings, flanged joints and saddle straps shall be protected on site by the cold application of Densyl tape or similar approved material supplied by the Contractor.

Application of Densyl tape with Denso Primer, Densyl Mastic and Outerwraps shall be strictly in accordance with the manufacturer's recommendations.

#### **1.29.1.4 Connections to Existing Water Mains**

The level of an existing line shall be accurately ascertained by the Contractor and the exact details of all the materials and other requirements determined and listed in a detailed method statement to be submitted for the approval of Engineer-in-charge.

The Contractor must have the approval of the Engineer-in-charge and the Employer before any work is started and the Employer shall have made arrangements for the closing off of supplies as well as proposing the most appropriate time for the shut-down.

The Contractor must consider execution of such connections as early in the program as practicable, because the Employer will need to select a time when there will be least interference to the network and will not accept any requests for extensions of the Contractor period arising from delays in finding a suitable time for the connections.

#### **1.29.1.5 Service Connection Installation**

##### **General**

The installation of service connections shall be in accordance with a standard design to be prepared by the Contractor and approved by the Engineer-in-charge. The diameter of the replaced service connection must not be less than the diameter of the existing service connection.

The Contractor shall prepare trenches for the service connections generally in accordance with the pipeline trenching requirements, and the reinstatement and compaction of the backfill follow the same procedure.

##### **Interruption of supplies to consumers**

The supply to any consumer's premises shall not be interrupted for more than one working day while the new service connection is made.

The Contractor shall be responsible for ensuring that the individual consumers are informed in advance of the timing and duration of any shutdown and for ensuring the access is available to the premises for the execution of the work necessary.

##### **Pipe Saddles**

Under pressure drilling should be carried out when installing pipe saddles on new or existing pipes. The Contractor shall follow the detailed procedures of the manufacturer and supplier of the under-pressure pipe equipment to install and secure the pipe saddles and to connect the corporation stops to them.



The pipe saddles shall generally be installed horizontally, unless otherwise instructed by the Engineer-in-charge.

### **Pressure Testing**

#### **a. General**

Field tests shall be applied as soon as practicable after installation and in any event before connecting to any existing service.

Before service connection installation may start, the distribution network shall be tested in sections, as they are completed, to confirm that the completed installation will withstand the test pressures applied without movement of any pipe or component and without leakage in excess of the allowance.

The Contractor shall provide all the labour and equipment whatsoever necessary for the testing operation.

Upon completion of the testing and connection to supply contractor may proceed with the service connections.

Any question as to whether a pipeline or any section of it is complete for the purposes of hand over will not be considered until testing is complete.

#### **b. Water for testing**

Only potable water shall be used for testing and the contractor shall obtain and pay for the water to test the pipeline

The Contractor shall submit all details of the source and condition of the water proposed for testing to the Engineer-in-charge for approval.

#### **c. Stop ends**

The Contractor shall take all measures necessary and shall provide all the material necessary for the construction and installation of stop ends and bracing to withstand the forces generated by the test pressures and the forces distributed to undisturbed sound ground or to existing or specially constructed structures.

The Contractor shall provide detailed of the bulkheads or end closures proposed, and should incorporate facilities for the release of air.

The numbers and location of stop ends will depend on the contractor's overall program of works and the length of section to be tested.

#### **d. Sections for testing**

Distribution pipelines

The pipeline shall be backfilled as far as necessary to provide restraint of the pipes under the test pressure, particularly at or near bends or stop ends.

All temporary and permanent pipeline restraints shall be properly installed prior to the application of the test pressure.

Where the Contractor has substantially completed backfilling before testing, for whatever reason, he is still liable for the cost and time needed to search and remedy any defective joint or joints discovered by the testing.

#### Service connections

Every service connection shall be tested individually. The test shall be applied between the closed corporation cock and the angle meter valve and the test pressure applied at the outlet point of the angle meter valve.

#### Filling

Lines should be filled as soon as practicable after laying, from a low point, at a rate that will avoid possible water hammer and development of excessive pressures.

Pipes with cement linings shall be kept filled and with a pressure of about 3 bar applied for 24 hour before hydrostatic test is made; plastic and non-absorbent pipes may be filled and tested immediately.

Any leaks revealed during the filling and soaking stage shall immediately be repaired with costs and delays to the contractor's account.

#### Test pressures

Distribution pipes and service connection shall be tested to 6 bar pressure, measured at the lowest elevation of the pipe under test, only if this makes any significant difference to the actual pressure applied, as the area is generally flat

#### Application of pressure

The test pressure shall be applied, using a pump of suitable pressure and delivery capacity and the amount of leakage shall be measured by drawing from either:

- (a) An approved calibrated water tank or
- (b) A suitable calibrated water meter obtained from the Employer.

When the hydrostatic test pressure has been obtained in the pipeline, this pressure shall be maintained for not less than 1 hour.

Regardless the actual measured leakage rate, all detectable leaks should be stopped whether from the pipe or any appurtenances. After repairs to correct detectable leaks, the pipeline shall be refilled and the test pressure reapplied. This process shall be repeated until no further leaks can be detected to the approval of the Engineer-in-charge.

The cost of all work whatsoever necessary to locate and repair leaks or other defects which may develop under the test, and subsequent to secure the required tightness shall be borne by the contractor.

The contractor shall carefully restore any sections of the pipeline excavated for the purpose of locating leaks to their original condition or to the condition required under the terms of

this contract.

### **Permitted leakage rates**

The volume of leakage shall be measured during a test period of not less than 1 hour at the defined test pressure and shall not exceed the rate amount needed to maintain the pressure constant throughout the test period and determined from the following formula:

$$V = 1/715 \times L \times D \times \sqrt{P} \text{ litres/hour}$$

Where L is the length of the pipe in m, D is the nominal diameter of pipeline in mm and P is the test pressure in kPa (with P = 600 kPa)

After the pipe has successfully met all the test requirements, cleaning, flushing and sterilizing of the line shall proceed as provided below

Upon acceptance of test results by the Engineer-in-charge, backfilling of the section of pipeline may be completed if not already complete.

### **Disinfection of pipelines**

#### **a. General**

All potable water pipe, fitting, valves, meters and appurtenances shall be disinfected by the Contractor as specified herein, unless otherwise directed by the Engineer-in-charge.

All water and chlorine required for disinfection of pipelines shall be provided by the Contractor at his own expense.

Bacteriological testing will be performed by a approved laboratory.

#### **b. Interior of pipes to be kept clean**

The Contractor shall again note clause 5.3 hereof, and take extreme care to prevent ingress of dirt or foreign materials of any kind into the pipework.

If in the opinion of the Engineer-in-charge, dirt or other foreign material has entered the pipework, which cannot be removed by flushing, the Contractor shall clean and swab the interior of the pipework with a five percent sodium hypochlorite disinfecting solution, to loosen and remove such foreign materials, to the satisfaction of the project management.

#### **c. Cleaning and disinfection**

The Contractor shall provide all labour, attendance, equipment, materials and testing apparatus, as may be necessary for the effective disinfection of all pipeline, and shall provide all the labour and attendance and the course thereof that are required to obtain the approval and certification of the Engineer-in-charge.

After testing immediately before commissioning, all pipeline shall be washed out and disinfected as follow:

(a) All mains shall be flush out with clean water until there is no evidence of foreign mater or colour in the waste flushing water.

(b) A stock disinfecting solution shall be prepared by mixing for about 5 minutes, in clear container, solution hypochlorite solution (15% available chlorine) and distilled water in the proportion of 0.8 litres to 1000 litres water by volume. Stock solution shall be made up fresh daily.

(c) The main to be disinfected shall be filled with potable water at the same time as the stock solution is added, through a convenient connection point, and in such quantities (to be determined by the Contractor and approved by Engineer-in-charge) as will result in a final solution containing 50mg/l free chlorine.

(d) Care shall be taken to ensure that the stock solution is added at the constant rate, commencing when water is fed into the main and ending as soon as the main is filled. Every main charged with disinfection solution shall stand for 24 hours, after which sample shall be taken at a washout valve by the Contractor in the presence of the Engineer-in-charge, from whom sterile sampling bottle shall be obtained and tested for free chlorine, for action as follows:

(a) If the sample does not show at least 2mg/l free chlorine, disinfection shall be repeated.

(b) If the sample is satisfactory the main shall be emptied, flushed out and filled with treated water and allowed to stand for 1 hour.

Two further samples shall then be taken as before one for a further determination of free chlorine and the other, in a sterilized bottle, for bacteriological analysis for action as follows:

(a) If the free chlorine determination shows more than 4mg/l free chlorine the main shall be flushed out again.

(b) If the bacteriological analysis is unsatisfactory, disinfection and sampling shall be repeated until satisfactory results are obtained before the main is commissioned.

**d. Certificate of Completion**

When the entire pipeline has passed this test, and provided all other requirements of this Contract have been met, the Engineer-in-charge will issue a Certificate of Completion in accordance with the Conditions of Contract.

**1.30 List of Reference Codes, Standards, and Guidelines**

The following Codes and Standards shall be referred for the items not covered in specifications provided in this document:

1. Documents prepared for Central Public Health and Environmental Engineering Organisation (CPHEEO).

a. CPHEEO Manual on water supply and treatment

b. CPHEEO Manual on Sewerage and Treatment

c. Maharashtra Jeevan Pradhikaran & SCDCL Guidelines

d. Indian Standards

e. Maharashtra State PWD specifications ( for other than water supply and sewerage items)

f. Ministry of Road Transport and Highways (MoRTH) specifications for road works.

## **2. SEWERAGE WORKS**

Excavation for foundation in earth, soils of all types, sand, gravel, soft, murum, hard murum with boulders, soft rock and hard rock....etc. complete

General The specifications contained in the standard specification volume IInd published by Public Works and Housing Department, Govt. of Maharashtra, Chapter Bd.A (1,A-2, A-3, A-4 & A-6 etc. on page No. 259) (Red Book) shall apply.

The excavation shall be done to the required depth and section as per design drawing and as directed by Engineer-in-Charge. Extra depth shall be made up clear with concrete or other suitable materials as directed by Engineer-in-charge at the cost of contractor. The excavated material shall be not being placed nearer than 600 m. from the edges of excavated portion. No. Compensation shall be admissible to the contractor due to any delay such as permission etc. After refilling of the trenches, the balanced stuff should be disposed off as directed. Refilling and disposal will be paid separately in relevant items if provided in BOQ.

### **2.1 Site Clearance**

The area to be excavated shall be cleared off. All trees and bushes and rubbish and other objectionable materials removed shall be burnt or disposed off as directed by the Engineer-in-Charge. The cost of such clearing shall be deemed to have been included in the rates accepted for different items under excavation.

During excavation, if masonry, concrete structure roots of trees etc are met with the same shall be removed without extra cost. The loss to public or private utility services such as telephone or electric cables/water mains or such other if comes across the trenches, shall have to be made good at the cost of the contractor. The permission for such crossing if required form the competent authority shall be obtained through Department. However delay in obtaining such permission shall not be considered as cause of delay for the works and no compensation shall be admissible to the contractor due to such delay.

### **2.2 Dewatering**

No distinction shall be made as to whether the material being excavated is dry, moist or wet. The item also includes bailing out of water manually to keep the trenches reasonably dry for all further works of concerning, lowering,laying & Jointing and testing of the pipe line till the completion of the work. For normal dewatering i.e bailing out water by manual means and diversions are included in excavation rate and no extra payment shall be made for such dewatering .Separate item of Dewatering is incorporated in the tender if dewatering is to be done by pumps,

### **2.3 Shoring and Strutting**

The item includes all shoring and strutting that may be required. On no account the width of trenches more than these mentioned here in after shall be measured. If excavation width more than the specified is required for the purpose of keeping machinery, steeping due to loose material or for any other reasons the same shall be at the Contractors cost.

### **2.4 Fencing, Lighting and Watching:-**

The contractors shall made all proper arrangement for protecting the work by means of

fencing, watching, and lighting at night, as directed by the Engineer-in-charge. The post of fencing shall be of timber, securely fixed in the ground not more than 3m. apart, and they shall not be less than 75 mm in diameter or less than 1.2 m. above the surface of the ground. There shall be two rails, one near the top of the posts and the other about 450 mm above the surface of the ground and each shall be from 50 mm to 70 mm in diameter and sufficiently long to run from post to post, to which they shall be bound with strong rope. The method of projecting not be allowed on any account. All along the edges of the excavated trenches a bank of earth about 1.20 m high shall be formed where required by the Engineer-in-charge for further protection. Proper provision shall be made for lighting at night and watchman shall be kept to see that this is properly done. In the event of the contractors not fully complying with the provisions of these clauses. The Engineer-in-charge may put up a fence or improve the fence already put up or provide or improve the lighting or adopt such measures as he may deem necessary without prior intimation to the contractor and all the cost of such procedure as may be adopted by the Engineer-in-charge, shall be borne by the contractor.

In addition to the normal lighting arrangements, the contractor shall be provide, wherever a sewer work is in progress, battery operated linking lights (6 Volts) in the beginning and end of a trench with a view to provide suitable indication to the vehicular traffic. The contractor shall also provide and display special boards painted with fluorescent paints indicating the progress of the work along a particular road.

The items of excavation are including necessary lighting at night at suitable intervals, but not more than 15 meter along the excavated trenches and at all crossing and barricading the same by fencing so as to avoid the accident. Chowkidars shall be employed at place where the trenches cross over any traffic road to caution the vehicles and pedestrians etc. The arrangements shall be maintained till completion of work and at the cost of the Contractor.

#### **2.5 Alignment and levels:-**

Before the excavation of trench is commenced, sight rails shall be erected at every 30 m. and at all points of change of direction, gradient and at ends. The excavation work shall be proceeded by a joint survey along with alignment of the main, to obtain ground level at every 30 m. or less distance. Temporary Bench Marks shall be constructed at every 300 m. distance along the alignment and shall be maintained till the completion of the work. All labour and materials for the survey work of fixing Bench Marks etc. shall be provided by the contractor at his own cost. Since the lines to be laid are drainage lines, the grade and level are very important factors. Those shall be maintained very carefully.

For any mistakes in survey the Contractor is fully responsible. He should not lay the pipes, unless the alignment is thoroughly checked by the Engineer-in-Charge or his authorized representative who is empowered to sign the work order book in token of checking the exact grade and level of the trenches excavation.

Excavation at random places shall not be measured by the Engineer in charge. Any non-technical practices during the excavation of the contracted work shall be viewed very seriously by the client and a note to that effect will be recorded against the Contractor in his name.

## 2.6 Depth and Grades of trenches :-

The trenches shall be excavated to the required grades and depth as shown on approved drawings or as directed by the Engineer-in-charge. If not so, the payment for the item will not be paid to the Contractor. The depths of excavation and the level of the pipe inverts shall be checked by means of boning rods of suitable lengths. Additional depths if required to be excavated for pits for sockets, collars, specials, joints, and for any other working facility shall not be measured and paid separately.

The minimum cover above the pipe shall be 0.90 m .

The bottom of trench shall be leveled both longitudinally and transversely or stepped as directed by Engineer-in-charge.

The Contractor shall notify the Engineer when the trenches are ready for bedding so that the Engineer can inspect and record the depth. Only on explicit approval by Engineer, the bedding shall be provided by the Contractor. If any public utility i.e. electrical cable, telephone cable, water connections, sewer connections, gutter damage etc. then same will be rectified by contractor at his own cost.

## 2.7 Width of trenches for excavation:-

The maximum width of trench allowable for different diameter of pipe sewer is given in the table below. The offset for width is allowable for every additional depth of trenches as tabulated for soft strata only.

The sides of the trenches shall be as nearly vertical as possible. The bottom of the trench shall be flat side to side.

**Maximum width of trench at Ground Level**

Sr. No	Diameter of Pipe	Lift 0.0 m to 1.50 m	Lift 1.5 m to 3.00 m	Lift 3.00 m to 4.50 m	Lift 4.50 m to 6.00 m
1	150 mm to 300 mm	1.00 m.	1.30 m.	1.60 m.	2.00 m.
2	400 mm	1.10 m.	1.40 m.	1.70 m.	2.05 m.
3	450 mm	1.15 m.	1.45 m.	1.75 m.	2.10 m.
4	500 mm	1.20 m.	1.50 m.	1.80 m.	2.10 m.
5	600 mm	1.30 m.	1.60 m.	1.90 m.	2.20 m.
6	700 mm	1.40 m.	1.70 m.	2.00 m.	2.30 m.
7	800 mm	1.50 m.	1.80 m.	2.10 m.	2.40 m.
8	900 mm	1.60 m.	1.90 m.	2.20 m.	2.50 m.
9	1000 mm	1.70 m.	2.00 m.	2.30 m.	2.60 m.
10	1100 mm	1.80 m.	2.10 m.	2.40 m.	2.70 m.

11	1200 mm	1.90 m.	2.20 m.	2.50 m.	2.80 m.
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The maximum width as mentioned in the of different depth of trenches or the actual width whichever is less shall be taken into account for measurement and payment. No. extra width is allowable due to large quantity or big boulders met with in the trenches.

It is expressly clarified here the excavation for laying the other services will be done along side the Sewerage line and trench for laying the sewerage line may overlap with other trenches i.e for Water supply , storm water, utility duct etc. Contractors shall co-ordinate with other agencies and Engineer in-Charge and plan the sequence of excavation required for different items under this contract or sequence and extent of excavation required depending on the works undertaken by other agencies. Engineer in-Charge decision in this regards shall be final and binding on Contractor. The Bill of Quantities of excavation for trenches sewerage line are provided for the trench width as given in above table. However as clarified above , in the event , trench for sewerage line overlaps with other trenches, the measurement for trench excavation shall be recorded deducting the overlapping width depending on the site condition. The estimated quantities may change due to overlapping of trenches and variation in rate shall not be applicable.

#### **2.8 Dressing and consolidation of the trenches**

The bed of the trenches shall be well rammed before laying of the murum or sand for bedding hollows, if any, shall be filled with murum duly rammed and watered to required level and grade at cost of the Contractor.

The contractor shall properly assess the work involved In above description and quote accordingly. The Executive Engineer's decision regarding any of the issue of scope of work here in and rates payable shall be final, conclusive and binding on contractor.

Any damages to the telephone cables / electrical cables shall be borne by the contractor, if demanded by the concerned authority. The cost of damages shall be directly paid by the Executive Engineer to the authority and such amounts shall be recoverable from the contractor through his due payments/ security deposits. In case water mains is damaged by the contractor during execution and quantity of water is wasted due to his negligence, that amount of wastage of water shall be recoverable from the contractor as per the MJP's water rate prevailing at the time of execution through his running bill.

For excavated width whichever is less shall be recorded and paid for. Extra widths for pits at sockets, collars, specials, joints, construction and also for working liabilities shall neither be measured nor paid for. However, excavation required for providing and casting fixity block, thrust blocks, encasing etc. will be measured and paid for under relevant item of excavation.

The pits for welding joints will also be paid under relevant item of excavation.

#### **2.9 Classification of Materials in Trenches**

The exact classification of the strata met with during the excavation shall be done by the representative of Engineer-in-Charge as given below and accordingly measurement shall be recorded under different items of excavation provided in BOQ . In case of any, dispute regarding classification of strata, the decision of Engineer-in-Charge shall be final and



binding. The strata classifications and its quantity shown are indicative only. The Contractor therefore, shall carry out his own assessment regarding the strata at different depth along the alignment, before submission of the tender.

### **2.9.1 All kinds of Soil**

This includes excavation in all types of soil including soil containing soils of all types, sand, gravel and soft murum.

#### **2.9.1.1 Hard Murum**

#### **2.9.1.2 Hard Murum and boulders, W.B.M. road**

#### **2.9.1.3 Soft rock , old cement and lime masonry foundation & asphalt road**

#### **2.9.1.4 Hard rock and concrete road**

### **2.10 Disposal of Surplus Stuff:-**

The contractor shall carefully excavate the road surfaces and stack the materials obtained from for road surface cutting systematically for selectively reusing the same for remarking the road. At times it may be necessary for the contractor to remove the excavated stuff to a suitable destination away from the excavation work. This stuff stacked as directed within 50 m. lead shall be brought back for refilling by the contractor without any extra payment on this account.

The excavated stuff remaining in balance after refilling and remaking of road shall be conveyed, unloaded and leveled by the contractor at a destination as directed by Engineer-incharge. The same shall be paid to the contractor separately under relevant item in BOQ. For rate of conveying and disposing of the material , MJP SoR 18-19,SectionC-(transportation), Lead Statement VI,Page No.30 shall be referred.

If it is seen that the surplus excavated stuff is being sold by the agency the agency will be penalized as decided by the Engineer-In-Charge.

#### **2.10.1 Excavation by chiselling mechanical means (in Hard Strata)**

Excavation in hard strata shall be done by chiseling, wedging or line drilling as specified any mechanical all means or ordered by the Engineer. The excavation refers to excavation generally for foundation, wet or dry, in hard rock by chiseling, wedging or line drilling and shall comply with the specifications.

### **Mode of measurement and payment**

The excavation shall be measured in Cubic meters only. Dimensions shall be measured correct to two decimal of meter and quantity shall be calculated to two places of Decimal of Cubic meters.

#### **2.10.2 Width of trenches**

The minimum width of the trenches admissible for payment shall be as under

<b>Sr. No.</b>	<b>Internal diameter of pipe</b>	<b>Width of excavation of trenches</b>	<b>Nature of strata</b>
1.	80 mm and below	0.70 M	In soft and hard material
2.	100 m	0.75 M	In soft and hard material

3.	150 mm	0.75 M	In soft and hard material
4.	200 mm	0.85 M	In soft and hard material
5.	250 mm	0.85 M	In soft and hard material
6.	300 mm	0.90 M	In soft and hard material
7.	350 mm	0.95 M	In soft and hard material
8.	400 mm	1.10 M	In soft and hard material
9.	450 mm	1.15 M	In soft and hard material
10.	500 mm	1.20 M	In soft and hard material
11.	550 mm	1.25 M	In soft and hard material
12.	600 mm	1.25 M	In soft and hard material
13.	700 mm	1.30 M	In soft and hard material
14.	750 mm	1.40 M	In soft and hard material
15.	More than 750 mm	OD + 0.60 M	In soft and hard material

**2.11** Providing laying in situ P.C.C. (M-150) 1:2:4 & C.C. 1 : 1 1/2 :3 (M – 200)

This shall comply as per standard specification No. Bd-E-1 on page No.287 or latest edition.

**2.11.1** Materials

**a) Cement:-**

All cement for use on the works except otherwise stated shall be the standard ordinary Portland cement manufactured in India and shall conform to the I.S. 269 latest version. It shall be of make and quality approved by the Engineer-in-charge.

The cement shall be stored in weather proof godown specially constructed for the purpose, of such a manner as to prevent deterioration due to moisture or intrusion of foreign matter. The weather proof godown shall have solid impervious floor raised 300 mm above the general ground level so that the cement stored there on shall not come in direct contact with the sub-soil moisture. The passages and the general construction shall be such that it affords full protection from weather effects. Large stock cement shall not be kept at the works but only sufficient quantities should be kept to maintain continuity of work.

**2.11.2** Storage of Cement:-

If cement is supplied in bags a suitable weighing scale shall be provided and shall required by the Engineer be used for checking the weight of every bag at the contractor's expense. Bags under weight by more than 2 percent of the nominal weight shall be rejected and removed from the site.

No cement has been store for more than 90 days ordinarily be allowed to be used on the works. Cement stored for longer period more than 90 days shall be used on work only with the specific written permission of the Engineer-in-charge who shall ascertain its quality after due testing in the laboratory before giving such permission. All expenses in connection with the test shall be borne by the contractors.

For testing the quality of cement, samples shall be taken from every consignment arrived at the site of work at the option of the Engineer. The contractors shall afford every facility to the Engineer for inspection for sampling the cement. The cement godown shall be so arranged by the contractors that each consignment could be stocked separately and in such manner so as to allow counting bags in each row with ease. The test result shall, ordinarily, be available within a week of sampling and the contractors shall not use any part of the consignment until the results of the tests are received and found satisfactory. However, the use of such cement becomes imperative before the test result are received, the contractors may do so entirely at their own risk and cost and the whole of such work carried out by them is liable for rejection, if the tests results are found unsatisfactory. Any consignment failing to meet the requirements to I.S. 269 shall be rejected and shall be removed from the work site within 48 hours of the intimation from the Engineer. The decision of the Engineer-in-charge in this respect shall be final and binding on the contractors.

The cement in connection with the testing of cement such as transport of samples, testing fees, etc. shall be borne by the contractors.

The cement used in any type of concrete shall always be measured by weight and one cubic meter shall be taken as per table of A.C.C. Hand Book.

**b) Aggregates :-**

All the aggregates shall conform to the latest I.S. 383. The aggregate shall consist of naturally occurring sand and gravel or stone crushed or uncrushed or a combination thereof. They are classified broadly under two categories, viz (i) Sand of fine aggregates and (ii) coarse, aggregates, depending upon their size. The fine aggregates are those which pass through I.S. Sieve No. 480 and the coarse aggregate are those which retained on I.S. sieve 480.

(i) **Storage of Aggregate:-** The fine and coarse aggregates shall be stored separately and in such a manner that segregation of the various sized particle shall not occur, the stock shall be formed on a platform of weak concrete, timber or similar approved hard standing and aggregates shall be kept clean and free from foreign substance.

(ii) Aggregates shall not be unloaded on to roadways or pathways the Engineer may reject any stock pile of part of a stock pile if improper storage has opinion, caused contamination with foreign substances.

(iii) Storage piles of aggregate shall be arranged with proper drainage and protection from rainfall in order to prevent excessive changes in moisture content taking place during concerning.

(iv) The aggregates both fine and coarse shall be hard, strong, durable, clean, free from veins and adherent coatings. The use of flaky and elongated pieces of aggregates shall be prohibited.

(v) The aggregate shall not contain deleterious materials such as iron pyrite, coal, mica, shale or similar laminate material, clay, alkali, soft fragments, sea shells, organic impurities etc. in such quantity as to affect the strength of durability of concrete or the reinforcement embedded in such reinforcement concrete.

(vi) The maximum quantities of deleterious material that may be permitted shall conform to the following limits by weight.

Deleterious substance	Fine aggregates percent byweight		Coarse aggregates percent by weight.	
	Uncrushed	Crushed	Uncrushed	Crushed
1. Local and lignite	1.00	1.00	1.00	1.00
2. Clay lumps	1.00	1.00	1.00	1.00
3. Soft fragments	-	-	3.00	-
4. Material passing through 75 micro sieve	3.00	3.00	3.00	1.00
5. Shale	1.00	-	-	-

(vii) The total of various deleterious materials occurring in any sample shall, no case, exceed 5 percent.

(viii) If the aggregate supplied is unclean, it shall be washed. If it is not properly graded, it shall be screened by hand or by mechanical means and the various sizes proportioned to get the required grading.

(ix) Storing of aggregate on dusty, muddy and grassy spots shall be avoided. They shall be stored on the works in such a manner as to prevent intrusion of foreign matter and protected from exposure to dust. They shall be placed in stock piles individual units of suitable sizes and in suitable layers to prevent segregation. They shall not be allowed to run down slopes.

### 2.11.3 Sand or fine aggregates:-

All fine aggregates shall consist of clean, hard, strong, durable uncoated siliceous gitty material consisting of well graded particles obtained from rock fragment. It shall be free from clay lumps injurious amount of dust, mica shell, soft or flaky particles, shale, alkali, organic matter lead or other deleterious substances.

i) The sand shall be taken from sources approved by the Engineer-in-charge. The sand or fine aggregate shall conform to the latest I.S. No. 383

ii) If the Engineer-in-charge considers if necessary, it shall be washed and / or screened before use, at the expense of the contractors.

iii) The sand shall have a fineness modulus of not less than 2.5 and not more than 3.0 and the grading shall conform as far as possible to the following analysis.

I.S. Sieve No.	Percentage Passing	
	Natural sand or crushed gravel	Crushed Stone
480	95-10	90-100
240	70-95	60-90

I.S. Sieve No.	Percentage Passing	
	Natural sand or crushed gravel	Crushed Stone
120	45-85	40-80
60	25-60	20-50
30	5-30	5-30
15	0-10	0-15

- iv) the specific gravity of sand shall not be less than 2.6
- v) In no case shall fine aggregate be accepted, containing more than 2 % by dry weight not more than 3.5% by dry volume, not more than 5% by dry volume of clay, loam, or silt. If any sample of fine aggregate shown more than 5% of clay, loam, silt in one hour's settlement after shaking in excess of water, the lot represented by the sample shall be rejected.
- vi) The following two field tests are recommended for ascertaining the percentage of clay lumps and impervious organic material and the contractors shall carry out the same if the Engineer-in-charge deems necessary.

#### 1. Test for determining silt in sand: -

Fill a calibrated tumbler with sand to half its volume and water there to until the tumbler is three quarters full. Shake up the mixture vigorously and allow it to settle for about an hour. The volume of silt visible on top the sand shall be measure. If the volumes of the silt standing over the sand exceed 5% of total volume of sand. The same shall be rejected.

#### 2. Calorimetric test for impurities :-

The sample of sand shall be mixed with equal volume of 3% solution (about one ounce, in a quarter of water) of caustic soda / sodium hydroxide taken in a plain glass and the mixture shall be allowed to stand for 24 hours. The liquid standing above the sand shall not be darker than lights straw (pale yellow) color. If the color marked yellow or brown, the test would indicate presence of organic material in excessive amount.

In case suitable sand is not available in adequate quantities within a reasonable and economical limit, the contractor may be allowed to use the crushed or pulverized stone or gravel either alone or mixed within natural sand in parts. The stone or gravel shall be clean sharp and free from dust etc. and shall conform to the latest I.S. 383.

The percentage of crushed stone to be mixed with sad shall be such as to obtain in fineness modules of blended sand within the units specified above and / or as approved by Engineer after laboratory test.

#### 2.11.4 Coarse Aggregates:-

All coarse aggregates use in concrete work shall consist of crushed rock gravel or other approved inert material.

- i) Broken or crushed rock from sound blue basalt or black trap free from zealot or other common impurities shall be used in the concrete as coarse aggregate. The particles of aggregate shall be clean, hard, tough durable, free from deleterious substance and shall contain no soft, flat or elongated pieces. The coarse aggregate shall have specific gravity not less than 2.6 and the water absorption measured after being immersed for 24 hours in water shall not be more than 6% by weight. The maximum percentage of deleterious materials in the coarse aggregate shall not exceed 5 % by weight in the aggregate when tested in conformity with I.S. No.383.
- ii) The nominal size of the coarse aggregate for reinforced concrete work shall be 20 mm larger coarse aggregate up to 40 mm size may be used if approved by the Engineer-in-charge, in plain concrete work. The maximum size of coarse aggregate shall be as large as possible within the limits specified but in no case shall be greater than one quarter than one quarter of the maximum thickness of the member, provided that the concrete can be placed in from work without difficulty so as to surround all reinforcement thoroughly and to fill the corners of the form work. The minimum size of coarse aggregate shall be, as mentioned earlier, such as to retain most of the material (90%-95%) on L.S. Sieve No. 480.
- iii) The aggregate shall be screened and, if necessary, blended to give the required grading when tested in the laboratory at contractors cost by means of standard mesh sieve, the grading shall fall within the following limits.

Sieve Size	Percentage retain by weight	
	Plain C.C.	R.C.C.
40 mm	-	-
25 mm	10 to 15	-
20 mm	35 to 40	15 to 0
10 mm	75 to 80	100 to 80
No. 480	98 to 100	100 to 95

The percentage given above are for guidance and the Engineer-in-charge reserves the right to modify the same to any other lower or higher value if considered necessary by him, in consonance with the requirements of the work.

iv) in the event of undesirable segregation occurring in coarse aggregates, the contractor shall separate the coarse aggregates in two or more suitable fraction as directed by the Engineer-in-charge, who shall set up the required limit of each such fraction. The grading so specified shall be such as to give a dense, water tight concretes of specified proportion and strength and required consistency.

v) The Engineer-in-charge shall have the right and authority to carry out routine control tests and analysis of the broken rock at any stage of the work processing and / or concerning operation and the contractors shall give all necessary facilities in respect of such

testing. The sampling and testing shall be carried out as per standard I.S. practice entirely at the cost of the contractor.

### **2.11.5 Water**

The water use for the preparation of concrete., for washing sand etc. and for curing shall be clean and free from objectionable quantities of silt, organic material, acid , alkali, salts, oil and other deleterious impurities and it shall be obtained from the sources approved by the Engineer-in-charge. Potable water shall generally be found fit for preparation of concrete. The quantity of water to be added shall generally be properly measured and controlled.

#### **i) Water Cement Ratio :-**

Suitable water cement ratios for the different mixes and used shall be determined in consultation with the Engineer-in-charge and they shall generally not be exceeding 0.5 (i.e. 50% by weight), the exact values being fixed after taking into account all relevant factors such as strength required, weather condition, water absorbed by material, work ability and slump required consistent with the work requirements, method of compaction etc. The concrete mix shall be designed with the materials which will be used hence forth for the preparation of concrete. The same task shall be repeated if there is change in the quarries for the fine and the coarse aggregate

#### **ii) Concrete :-**

All cement concrete, whether used in R.C.C. work or plain concrete work shall be M-150, M-200 and M-250, as per latest IS Code.

### **2.11.6 Gauge Boxes**

Gauge boxes approved type shall be used for measuring sand and coarse aggregate in required proportion whenever concrete is allowed to be prepared by mixing the aggregate on volumetric basis. Such boxes shall be of seasoned timber or steel and shall be of such size and shape and shall be used in a manner as to enable the proportion of the material to be checked readily. The cement used in concrete is however shall not be used by measuring it in gauge boxes, but it shall be measured by weight, whatever may be the type of concrete.

#### **i) Manufacture and Placement of concrete :-**

##### **a) Batching :-**

Whether controlled or ordinary concrete is to be mixed, the quantity of cement shall be determined by weight. If the mixers weight per bag is to be used, the same shall be verified by weighing a reasonable number of bags.

Whenever direct use of bagged cement is allowed, one bag of cement shall be considered to contain 50 kg of net weight of cement. This shall, however, be verified at site by weighing for which the contractor shall provide an accurate weighing apparatus on work sites Having once decided the mix, the Engineer-in-charge may permit further mixing of the aggregate to be done on volumetric basis.

Wherever the concrete is to be laid in trenches, the trench shall cleaned, watered and compacted before placing. The sub soil water which met shall be removed and the trench

shall be kept dry during and after two hours of placing of concrete. For more depth of P.C.C. mechanical vibrator shall be used for compaction by the contractor.

The damages to concrete during laying of pipe line shall be rectified free of cost. The rate for the concrete includes all labour, material centering shuttering securing etc. all leads and lifts.

Mixing of concrete shall be done with concrete mixer.

For providing Electric wiring duct, tubes of the required diameter and length shall be provided through walls beams and floors, slabs as and when directed without any extra cost.

- a) The contractor will make his own arrangement for receiving all material tools etc. required for the work.
- b) No extra charges for the carriages of water will be allowed.
- c) The rates for all items are inclusive of all charges such as carting, lifting, etc. No extra payment for any lead and lifts will be paid for any item.
- d) The contractor should not be Sublette without written permission of the Engineer-in-Charge

Cement cubes of size 15 cm x 15 cm x 15 cm shall be taken during the concreting of important structure like RCC wet well, sewage treatment plant etc. to check the strength of the concrete and its acceptability. While taking cubes the requirements specified in the relevant Indian Standard specification shall be observed properly and required number of cubes shall be casted. So as ascertain to acceptability of the concrete. Similarly, proper care shall be taken for curing of the cubes the requirements specified in the ISS in respect of casting of concrete cubes and curing thereof, with acceptability criteria of concrete are reproduced below, which shall be following scrupulously.

#### **2.11.7 Frequency of Sampling (IS:456:2000 Clause 15.2)**

- a) Number of samples to be taken during concreting based on the quantum of concrete cast shall be as below.

Quantity of concrete in Cum No. of samples

01 to 05	1
06 to 15	2
16 to 30	3
31 to 50	4
50 and above	4 + 1 for every 50 Cum part thereof

At least one sample shall be taken from each shift of concrete and three test specimens (cubes of size (15 x 15 x 15 cm) shall be cast from each such sample for testing of the compressive strength additional three cubes will also have to be taken for 7 days test.

The test strength of the sample shall be the average the strength of the three specimen.



**2.11.8 Acceptance Criteria (IS: 456:2000 Clause 16)**

The concrete cost shall be supposed to be acceptable in the compressive strength (i.e. average strength of the three specimen) of the samples fulfill the following requirements.

a) Every sample has a test strength not less than characteristic value.

**OR**

b) The strength of one or more samples, though less the characteristic value is in each case, not less than the greater of following.

i) The characteristic strength minus 1.35 times the standard deviation.

**and**

ii) 0.80 times the characteristics strength.

c) And the average strength of all the samples is not less than the characteristic strength plus times the standard

$$1.65 \times \frac{1.65}{\text{No. of samples}} = \text{deviation}$$

d) However, it should be noted that individual variation should not be more than the percent of average.

**2.11.9 Standard Deviation Values**

Grade of Concrete	Assumed Standard deviation in Kg/Cm <sup>2</sup>
M-100	35.00
M-200	46.00
M-250	53.00
M-300	80.00

**2.11.10 Curing of Concrete Cubes (IS:516:1959, Clause 3.3)**

The test specimen (cubes) shall be stored on the site at place free from vibration, under damp matting, sacks or other similar material for 24 hours + ½ hour from the time of adding the water to the other ingredients. The temperature of the place of storage shall be within the range of 22o to 32oC. After the period of 24 hours, stored in clean water at temperature of 24o to 30oC until those are transported to the testing laboratory. Samples shall be sent to the testing laboratory well packed in damp sand, damp sacks or other suitable material as to arrive there in a damp condition, not less than 24 hours before the time of test.

On arrival at the testing laboratory, the specimen shall be stored in water at a temperature of 27o + 2o C until the time of test. Record of the daily minimum and maximum temperature shall be kept, both during the period specimen remain on the site and in the laboratory.

**2.11.11 Test Procedure (IS:516:1959 Clause 5.5)**

Specimen stored in water shall be tested immediately on removal from water and while those are still in the wet condition. Surface water and grit shall be wiped off the specimens and any projecting fins removed. Specimen, when received dry, shall be kept in water for 24 hours before taken for testing. The dimensions of the specimens to the nearest 0.2 mm and also weight shall be noted before testing.

**2.11.12 Other Things**

Here, it should be specifically noted that age of concrete cube will be age as on the date of testing i.e. time difference between addition of water to dry ingredient and actual testing.

**2.11.13 Mix Design**

The following instructions shall be followed as regards preliminary design of mix and methods of batching of plain cement and reinforced cement concrete. These instructions should be treated as supplementary to the relevant provision in the specifications for the respective items contained in the book of standard specification and will be carried the provisions contained therein, wherever they are contrary to the following instructions.

The preliminary design and batching for various grades of concrete shall be governed by the following guidelines.

No.	Concrete Grade	Guidelines
1	Upto M-150	This should only be ordinarily concrete. No change may be prescribed in the present practice as regards preliminary design of mix and permitting volume batching.
2.	M-200 to M-250	Preliminary mix design must be carried out for these mixes. However, weigh batching shall be insisted for cement, fine aggregate and course aggregate.
3.	Above M-250	Preliminary mix design must be prepare for such mixes weigh batching should be for cement fine aggregate and course aggregate.

For the grades of concrete M-200 and above the preliminary mix design shall be carried out from the approved laboratory. The rate quoted by the contractor in the agreement for these items shall be final and binding on him, irrespective of content of cement required as per preliminary mix design and there shall be no adjustment in the agreement rate for these item on this account.

The charges for preliminary design of concrete mix shall be entirely borne by the contractor. For grades of concrete M-200 and above where cement is to be used by weightment, the cost of extra cement required to make up the underweight bags shall be borne by the contractor.

For the items of concrete of grades lower than M-200 and other items in the agreement where cement is not to be used by weightment the cement bags as received from the manufacturer and shall be assumed to contain cement of 50 kg net weight.

This shall be as per specification of P.W.D. (Hand Book) and as directed by Engineer-in-charge. Only trap stone shall be used other than the specification for this item in Standard Specification Book.

- a) General specifications of this work shall be as per standard specification of Public Works Department, latest edition, for PCC Bd.-E1 to E-7 and for RCC Bd.F2 to F16.
- b) Whenever concrete is to be laid in trenches, the trench shall be cleaned, and watered before placing. The sub-soil water which is met shall be removed and the trench shall be kept dry during and after 2 hours of placing concrete.
- c) Pedestal pier shall be perpendiculars to center line of pipe.
- d) Proper seat shall be left on top of pedestal pier to construct saddle. Seat shall be strictly done within 24 hours, failing which MJP will not accept it for payment
- e) RCC saddle shall be constructed as per detailed drawing. The top of saddle where pipe rests shall be provided with wearing plate fixed in CM 1.3 smoothly and CM grouting may be done after pipe is placed and no extra payment will be made for this.

#### **Mode of measurement and payment**

The tender rate shall be for one cubic meter of concrete. The concrete shall be measured for its length, breadth and depth limiting dimensions to those specified in drawing or as per direction of Engineer-in-Charge.

#### **2.12 Mild Steel and TOR Steel Reinforcement for RCC Works**

The item provides for supply of mild steel, tor steel bars, cutting, bending with G.I. wire and placing in position, welding for reinforcement in the RCC.

Mild steel and tor steel bars shall conform to Specification A-10 of Standard Specification of Public Works Department, Latest Edition.

The binding wire shall conform to Specification A-15 of Standard Specification of Public Works Department, Latest Edition.

During contractor's supply, if any, the steel bars shall be supplied directly to the site of work.

Bending reinforcement conform accurately to the dimensions and shapes in the details drawings (approved) or as directed by the Engineer-in-charge.

Bars shall be bend cold only. In no way bending by heat will be allowed.

Bars with kinks, bends or cracks shall not be used.

Details of length, size, laps and bending diagram shall be got approved by the Engineer-in-charge.

As far as possible full length of bars shall be placed as per drawing details. When full

lengths are not available, bars be supplies only after written permission of the Engineer-in-charge. Supplies shall be staggered and in tension zone shall be avoided strictly. Bars shall be lapped as specified in IS:456-2000 with due regards to the grade of concrete. Welding may be used for large diameter of bar only after permission of Engineer-in-charge.

Welding, if permitted shall conform to specification B.10.7 of Standard Specification of Public Works Department.

All reinforcement shall be accurately placed in position with spacing and cover shown in detailed drawing and firmly held during the placing and setting of concrete. Bars shall be ties at all intersections. Binding wire of 1.63 mm or 1.22 mm diameter (about 16 or 18 gauge) shall be used. Spacing of the bars shall be maintained by means of stays, blocks ties, spacers, hangers or other approved supports at sufficient close intervals so that bars will not be displaced. During placing vibrating or compacting concrete, placing bars for reinforcement on a layer of fresh concrete as the work progress will not be permitted. The use of pieces of broken stones or bricks or wooden blocks for maintaining spacing or cover shall not be permitted. Layers of bars shall be separated by precast cement blocks, spacer bars or other devices.

Full details of numbers, sizes, lengths, weights, laps, welds, spacing of bars placed in position in different parts of the work shall be recorded by the contractor and certified and signed by the Engineer-in-charge or his representative to show that all reinforcement has been placed correctly as per sanctioned drawing or as directed by the Engineer-in-charge in writing, before placing concrete. No concrete shall be placed in position until the certified the correctness of reinforcement, recording the steel measurements and has given permission in writing to place concrete. After approval of reinforcement as above, it will be the contractor's responsibility to seal that the spacing of reinforcement and arrangements are not tampered with in any way before or during concreting.

Any steel is required to be procured by Contractor. He shall produce the test certificate. In addition, actual test shall be carried out according to IS:432-1982, in an Government laboratory and the cost of test shall be borne by the contractor, including all transport, etc.

This item includes....

- a) Cost of labour, materials, use of tools, plant and tackle and other incidental items to complete the work satisfactorily.
- b) Supplying, conveying, cleaning, cutting, bending, binding with (1.63 mm or 1.22 mm diameter – 16 to 18 gauge) wire on spot, welding and placing reinforcement in position and maintaining it clean and in position till the concrete is laid.
- c) Cost of sampling and testing, as required.

In no case, any foreign material e.g. oil, grease, etc. which prevent bonding between steel and concrete shall remain on steel on steel bars during placing of concrete.

### **Mode of measurement and payment**

The tender rate shall be on weight basis for MT of MS/tor steel reinforcement. The weight of steel reinforcement used for the item of concrete will be measured in tonnes based on

total compacted weight for the sizes and lengths of bars as shown in drawing or as directed by Engineer-in-charge.

The lengths of the bars shall be measured correct to 2 places of decimals of meters. The weights for payments shall be calculated according to standard weights mentioned in the ISI Hand Book correct upto 0.10 Kg.

### **2.13 Burnt Brick Masonry Second Class**

#### **2.13.1 General**

This specification lays down the requirements for B.B. Masonry 1st class in cement mortar of specified proportion required for various structures, including necessary scaffolding, watering etc. The specifications shall conform to IS: 2212-1991 its latest revision.

#### **2.13.2 Materials**

**BRICKS** : Bricks shall be first class and shall conform IS: 1077- 1992.

#### **2.13.3 Mortar**

The quantity of mortar to be used per Cum of B.B. masonry shall be about 30 to 32% or 300 to 320 liters for conventional bricks and 32 to 33% or 320 to 330 liters for ISI bricks. The proportion of mortar shall be as specified in the item of the tender.

#### **2.13.4 Construction**

**Joints:** Joints shall not exceed 12 mm (about ½") in thickness and shall be uniform throughout.

All other specifications of KB-1 for B.B. masonry first class shall apply to this class of masonry also.

#### **Mode of Measurement:**

The contract rate shall be for a unit of one cubic meter of Masonry. The concrete shall be measured for its length, breadth and depth limiting dimensions to those specified on the plan or as directed by Engineer-in-Charge. No deduction shall be made for reinforcement in concrete in RCC work. Individual dimension shall be measured in Cum. And quantities shall be worked out correct upto three places of decimal of a cubic meter.

#### **2.13.5 Half Brick Masonry**

The half brick masonry shall be in cement mortar specified in the item but not weaker than 1:4.

Mode of measurement: Per Sq,mt.

The half brick masonry shall be reinforced by 2 No. of 6 mm dia M.S. longitudinal bars or 2 No. of hoop item strips of 25 x 1.6 mm size, at even third course properly bent and bounded in vertical joints of the brick work or to main walls as directed by the Engineer-in-charge, if continuous strip is not available, strips shall be rivet jointed with a minimum overlap of 8 cm. All the bricks shall be laid stretch wise breaking joint with the upper and lower courses. Fixtures, plugs, hold, fasts, frame down, windows shall be based into brick work while laying only and of the correct levels and positions. Holes of required size and stage shall be left

in the brick work during laying for fixing pipes or service lines, passage of water etc. After the pipeline work is completed, extra hollow left around the hole shall be plugged with 1:3 cement mortar or 1:3:6 cement concrete. Hold fasts for frames of doors and windows shall be accommodated in the joints of the brick which laying. The joints in the courses where reinforcements is places shall admit of a mortar cover at least 5 mm for the brick work with 15 bricks and not more than 12 mm for conventional brick work. A set of mason's tools shall be maintained on work for each group of 3 masons or less for frequent use and checking. The ends of walls shall be bonded into the side walls where necessary.

The joints shall be raked out to depth not less than the thickness of the joints.

This item shall include:

- a) Providing and fixing mild steel reinforcement bars or hoop iron strips as mentioned above.
- b) Leaving holes for fixtures or pipes and making them good after completion of the work.
- c) Building in frames, hold fasts etc. and forming chassis and grooves.

#### **Mode of measurement**

The contract rate shall be for a unit of one Square meter and quantities shall be worked out correct upto three places of decimal of a Sq.mt.

### **2.14 Cement Plaster: Internal**

#### **2.14.1 General**

This specification lays down the requirement of cement plaster to be applied to concrete or brick masonry surface. In cement mortar of specific proportion and thickness.

#### **2.14.2 Preparation**

For masonry all joints in the frame work that is to be plastered shall be raked out to a depth not less than the width of the joints or as directed by the Engineer-in-charge. The raking shall be done taking care not to allow any chipping of masonry. In new work the raking out shall be done while the mortar in the joints is still green. Smooth surface of concrete or plaster etc. must be suitably roughened to provide necessary bond for the plaster all dirt, soot oil paint or any other materials that might interfere with satisfactory bond shall removed and surface wetted before plastering is started.

General: The item shall comply with specification B.11.b subject to the additional clauses Bd.L 1.2, Bd.L 1.3, Bd.L 1.4 and the following

Finishing: When no finish is specified the plastered surface shall be rubbed well to an even plane with a wooden float for external surfaces and finished smooth with a steel trowel for internal surfaces.

- When cement finish is specified, coat of pure Portland cement slurry 1.5 mm (1/6") thick shall be applied to the plastered surface while the second coat is still fresh. If neeru finish is specified, then the surface shall be finished as per specification for Item Bd.L-10.

The thickness of the cement plaster shall be 12 mm excluding cement or neeru finish.

### **Mode of measurement**

As per NdL-1.7 on square meter basis

#### **2.14.3 Materials**

Cement mortar shall be prepared from cement and as specified for RCC work and mixed in the proportion specified. Sand shall be screened and washed if called upon to do so. Water proofing compound of directed make in directed quantities shall be added where it is water proof plaster, scaffolding shall be prepared from sound materials and shall be provided, where ever situation demands for facility of proper working.

#### **2.14.4 Gauges**

Patch of plaster 15 x 15 cm shall be put on about 3 m apart as gauges to ensure even plastering in one place.

#### **2.14.5 Finishing**

In any continuous face of wall, finishing treatment of any type shall be carried out continuously and day to day breaks made to coincide with architectural breaks in order to avoid unsightly junctions. All mouldings shall be worked true to template and drawn neat, clean and level. All exposed angles, junctions and openings shall be carefully finished.

#### **2.14.6 Watering**

All pointing work shall be kept damp continuously for a period of 14 days. To prevent excessive evaporation of the sunny and wind ward side of the building in hot, dry weather matting or gunny bags may be hung over on the outside of the plaster in the beginning and kept moist. If the contractor fails to water the work to the satisfaction of the Engineer-in-charge, the requisite labour, materials and equipment to water the work properly shall be engaged departmentally at the cost of the contractor.

Cost all scaffolding is included in the tender rate.

### **2.15 Sand Faced Cement Plaster**

#### **2.15.1 General**

The item shall comply with the specification B.11 in all pertinent particulars. In addition Bd.L.1.2, Bd.L 1.3, Bd.L 1.4 and the following specifications shall also be complied with.

**Base Coat:** The base coat plaster shall be of cement mortar 1:4. Water proofing compound of approved make like Pudlo, Sika, Accorproof shall be added according to the maker's instruction in Bd.L 2 which a thickness of 15 mm for brick work and concrete surfaces and 20 mm for rubble stone masonry. Keys shall be formed on the surface by thoroughly combing it with wavy horizontal lines about 12 mm apart and about 3 mm deep when the mortar is still plastic.

**Sand Faced Treatment:** The cement mortar fo sand faced plaster shall have washed Kharsalia or Kasaba or similar type of approved sand with slightly larger proportion of coarse material The proportion of cement to sand shall be 1:4. The water is added gradually to make the mixture homogeneous. The thickness of finishing coat shall not exceed 8 mm. After applications the surface should be finished with a wooden float lined

with cork and tapped gently to retain a coarse surface texture. When the finishing coat has hardened the surface shall be kept moist continuously for 14 days.

Item to include relevant portion of Bd.L 1.6 it shall also be include the base coat and sand face treatment of above.

Mode of Measurement and payment per Bd.L 1.7 on square meter basis

The specification lays down the requirements of applying sand faced plaster in specified thickness with cement mortar to concrete or masonry surface in specified coats. This shall conform to specification for ordinary cement plaster where ever it is not irrelevant and in addition following shall also be applicable.

Tools and accessories used in plastering work be thoroughly cleaned before plastering is done.

The programming of other building operations before during and after plastering shall be according to the instructions contained in Clause 4 of IS:1661-1960 or its latest revision. The item shall be executed as per Red book specification BdL-7 to 7.50 page No. 351)

Care shall be taken that other parts of work of adjacent work are not damaged while plastering.

The base coat plaster shall be of cement mortar of specified proportion 1:4 and thickness as mentioned in the item or otherwise, it shall be of cement mortar 1:3 and thickness 15 mm to 20 mm. The base coat shall be laid in a similar manner as stipulated in. However, instead of finishing the top surface smooth keys shall be formed on the surface thoroughly combined in with wavy horizontal lines about 12 mm apart and about 3 mm deep when the mortar is still plastic. The base coat shall be cured for suitable period as per relevant code.

## **2.16 Water Proof Cement Painting**

### **2.16.1 General**

This specification lays down the requirement of applying cement based paint in specified coats to concrete or masonry surface.

### **2.16.2 Materials**

Cement paint with a base of white portland cement of approved manufacture. Colour and shade shall be used. Approved quality cement based paint shall be brought to site in original air tight containers with seal intact.

Scaffolding wherever necessary shall be provided to the entire satisfaction of the Engineer-in-Charge.

### **2.16.3 Preparation**

The surface to be painted shall be cleaned of all loose dust, and dirt paints and all cracks, holes and surface defects shall be repaired with cement plaster cured and allowed to set hard. Before the painting is commenced the surface is wetted well and water is allowed to



run off. Any grease, oil paint, shall be removed by approved methods.

#### **2.16.4 Application of Paint**

Mixing of paint and procedure of painting shall be as specified by the manufacturer when no specification are following specification shall generally apply.

The dry cement shall be thoroughly mixed with clean fresh water to produce paint of required consistency (normally that of ordinary paints). The paint shall be kept stirred and used within one hour of mixing hardened or damaged paint shall not be used. The paint shall be applied by brushes in the manner specified by the manufacturer.

The number of coats shall be specified in the wording of the item. When more than one coat is to be given the subsequent coats shall be applied after the preceding coat has thoroughly hardened, inspected and approved.

#### **2.16.5 Curing**

Each application of paint should be wetted at the end of the day with a fine water spray, depending on climatic conditions. Wetting shall be done only after an interval of at least 6 to 8 hours after the applications. In dry weather the painted surfaces shall be kept damp for at least two days and protected from direct sun.

#### **Mode of measurement and payment**

The item includes,

- a) All materials and labour for painting.
- b) All equipment and scaffolding.
- c) Curing as per specification
- d) Non uniform colour or shade shall be rectified without any extra cost. The item shall measured and paid in per Sqmt basis of area painted.

#### **2.17 Providing, fixing RSJ and other structural steel work**

The specification of the work as per standard specification Bd.C2 and the item cover fixing MS/RS girders, M.S. angle, channels, flats, base plate gusset plates, cleat, bracket etc. and other accessories as per requirement and as directed and fabricating the assembly by cutting, drilling holes etc and erecting and fixing item as site with necessary riveted or welded joints fixtures with nuts and bolts etc. wherever necessary together with their proper fixing and embedding in masonry or slabs of concrete as directed. Structural steel works materials shall be procured by the Contractor from open market at his cost. The item includes 3 coats of oil paint of shade as directed to all structural work.

All above operations including cost of materials and labour thereof are included in the tender item. The measurement and payment shall be on the weigh basis in the unit as mentioned in Schedule-B actually erected at site as directed shall be admissible for payment. RSJ channels, angles, flats, gusset plates, brackets base plate, cleats, packing pieces actual used as directed shall be admissible for payment but not the rivets, nuts and bolts etc. the riveted or welded joints or fixing with nuts are included in the tendered rates. The specifications for this item given in Standard Specification (Red Book) published by B&C Department will be followed.

### **2.17.1 Structural Steel Work (for pipe line, outlet arrangement work only)**

Requirements specified in this section will form a part of detailed specifications for items of works falling under this category. Indian Standard shall apply as if included herein. Design of structure shall be compliance with Indian Standard (IS) viz. Rivet IS:1148-1964 for bolts IS:1148-1964 and IS:800-1962 for structural fabrication IS:800-1962, etc.

### **2.17.2 Principal Items**

- 1) Structural steel members
- 2) Steel joints
- 3) Plates and connection
- 4) Steel chair assembly
- 5) Pipe supports and hangers for piping in all locations
- 6) Pipe railing
- 7) Ladders and stairs
- 8) Misc. metal work for water supply and sewerage disposal installations.

### **2.17.3 Quality Assurance**

Unless otherwise specified all work specified herein and shown on the drawings shall conform to the applicable requirements of the following specifications and codes.

- A) Fabrication and erection of structural steel shall be in accordance with IS:8001962. (latest edition)

### **2.17.4 Welding Inspection**

The contractor shall perform all structural field welding under continuous inspection of a representative of the SCDCL. Notice will be given at least 24 hours in advance of needed inspection.

### **2.17.5 Sub Metals**

#### **2.17.5.1 Shop Drawings**

The contractor shall submit shop drawings for approval before fabrications of any of the work. Complete fabrication details with material and specification lists showing all welds, fabrication and finish details, and shop painting will be shown with the drawing. In approving shop drawings, the owner does not assume responsibility for accuracy of the work relative to other components as constructed.

### **2.17.6 Shop Fabrication**

#### **2.17.6.1 General**

- A) The maximum possible fabrication on structural steel work shall be manufactured off-site in a fabrication shop.
- B) Shop connections shall be welded or bolted, unless otherwise indicated.
- C) In so far as possible all work shall be fitted and assembled in shop ready for erection.

#### **2.17.6.2 Members**

- A) All members shall be free from twists, kinks, buckness or open joints.
- B) All members, holes and their spacing shall be so accurately made that when assembled the parts shall cone together and bolt without distortion.

- C) Parts assembled with bolts shall be in close contact, except where separators are required where unlike metals are in contact, to insulate as necessary to prevent corrosion.
- D) Bolt holes will be provided to secure special items, if any, to structural members.
- E) Bearing surface shall be planned to true beds. Abutting surface shall be closely fitted. Steel requiring accurate alignment shall be provided with slotted holes and/or washers for aligning the steel.
- F) All materials shall delivered in the order, in which they will be required so as to avoid all delay in completion of the project.

#### **2.17.6.3 Welding**

- A) Welding in shop and field shall be done by qualified operators who have experience of similar work. The standard for welders will be as required by IS:817-1966.
- B) All steel before being fabricated shall be thoroughly wire brushed, cleaned of all scale and rust and thoroughly straightened by approved methods, that will not injure the materials being worked on. Welding shall be continuous along the entire line of contact except where tack or intermittent welding is permitted. Where exposed welds shall be cleaned of flux and slag and ground smooth.

#### **2.17.6.4 Erection**

- A) Erection shall include the installation and erection of all steel as called for in this section. The contractor shall verify correctness before starting erection.
- B) As erection progresses, the work shall be securely bolted up to take care of all dead-load, wind and erection stresses.
- C) No final bolting or welding shall be done until each portion of the structure has been properly aligned and plumbed.
- D) Bolts shall be drawn up tight and threads set so that nuts cannot become loose.

#### **2.17.6.5 Damaged Members**

During erection, members which are bent, twisted or damaged shall be straightened or replaced as directed. If heating is required in straightening, a heat method shall be used, which will ensure uniform temperature throughout the entire members. Members which in the opinion of the SCDCL are damaged to an extent impairing appearance, strength or service ability, shall be removed and replaced with new members.

#### **2.17.6.6 Anchor Bolts and Anchors**

Anchor bolts and anchors shall be properly located and built into connection work. Bolts and nuts shall be preset by the use of templates or such other methods as may be required to locate the anchors and anchor bolts accurately. Embedded anchor bolts that are submerged in process, water or pump room floors, or are in enclosed tanks or spaces exposed to process gas or moisture shall be of stainless steel with nuts of same material. To such stainless steel bolts, a non-oxidizing lubricant grease will be applied before bolting.

#### **2.17.6.7 Bearing Plates**

Bearing plates shall be provided under beams and columns resting on walls or footings. Bearing plates may be attached or loose and aligned on steel wedges or shims. After the supported members have been plumbed and properly positioned and the anchor nuts tightened, the entire bearing are under the plate shall be dry packed solidly with bedding

mortar. Wedges and shims shall be cut off flush with edge of bearing plate and shall be left in place.

#### **2.17.6.8 Substitutions**

Unless otherwise directed, the exact sections, shapes, thickness, sizes, weights and the details of construction shown for the structural steel work, shall be furnished. However the contractor, because of his stock or shop practices, may suggest change of the net area of section is not thereby reduced, if the section properties are at least equivalent and if the overall dimensions are not exceeded. All substitutions or otherwise deviations from drawings and/or specifications shall be specifically noted or 'clouded' on the shop drawing submittals.

#### **2.17.6.9 Flame Cutting**

Flame cutting by the use of a gas cutting torch in the field for correcting fabrication errors will not be permitted on any major member in the structural framing. The use of a flame cutting torch will be permitted only on minor members, when the members is not under stress, and only after the approval of the SCDCL has been obtained.

#### **2.17.6.10 Storage of Materials**

Structural materials, either plain or fabricated shall be stored above ground upon platforms, skids, or other supports. Materials shall be kept free from dirt, grease and other foreign matter and shall be protected for corrosion.

#### **2.17.6.11 Test Reports**

Certified physical and chemical mill test reports for material used for major structural members shall be furnished. All tests shall be performed in accordance with applicable Indian Specification Standards.

### **2.17.7 Materials and Workmanship**

#### **A) Structural Steel and Miscellaneous Metal Works**

##### **i) General**

This work shall include the furnishing and installation of all structural steel and miscellaneous metal work and related work including grating and grating supports, pipe hangers and supports, tanks, manhole steps, equipment guards, anchors and other appurtenances and any other shown on the drawings or herein specified. All materials shall be new, sound and of the best quality available.

##### **ii) Material**

Steel rolled sections, plates and bars shall conform to the latest editions of IS:226, 808, 1730, 1731, 1732 and 3954. Pipe used for columns or other structural purposes shall conform to IS:1161-1968. Iron for castings shall conform to IS:210.

#### **B) Steel Joints**

These shall be fabricated true to size and details shown on drawings in strict conformance with requirements of reference standards.

#### **C) Common Bolts**

Bolts and nuts shall conform to IS:1363-1967.

#### **D) Welding Electrodes**

The electrodes shall conform to the requirements of IS:814, latest edition.

#### **E) Shop Painting**

Structural steel not designated to be galvanized shall be shop coated, using priming coat of red lead as specified in painting section, of these specifications. The portion of steel to be embedded in concrete shall not be painted.

**F) Galvanizing**

All metal work shown or specified to be galvanized, shall be zinc coated, as per IS:2629-1966. The zinc coating should be free from defects and shall have uniform thickness of coating. Galvanizing coating marred or damaged during erection or fabrication shall be repaired by any approved process as directed by the Engineer.

**G) Shop Painting**

Before leaving the shop all steel not shown or specified to be galvanized shall be given one coat of primer red lead. Final painting shall be in specified coats of approved and approved brand oil paint. The portion of steel to be embedded in concrete shall not be painted.

**H) Test Reports**

Certified physical and chemical mill test reports for material used for major structural members shall be furnished by the contractor.

**I) Shop Drawings**

Five sets of shop drawings shall be submitted to the Engineer, for approval before fabrications of any of the work. In approving shop drawings, the Engineer does not assume responsibility for accuracy of the work relative to other plant components, as constructed.

**J) Anchor Bolts**

Anchor bolts shall be galvanized and shall be fabricated as shown or as specified by the equipment manufacturer.

Suitable expansion bolts may be used in lieu of anchor bolts, at certain locations. It shall be the responsibility of the contractor to request the substitution and obtain the Engineer's approval, regarding type and location of expansion and bolts proposed to be used prior to pouring concrete.

**K) Steel Grating**

Seat angles and anchors shall be of steel, grating and support shall be galvanized. Gratings to be supplied and installed as detailed in the drawings.

**L) Mechanical Equipment Guards**

All rotating belts, pulleys and shafting shall be covered and guarded in conformity with applicable safety requirements or as directed by the Engineer.

**Mode of Measurement**

This item will be calculated as per Metric Ton basis.

**2.18 Refilling the trenches with available excavated stuff with soft material**

After lowering, laying, jointing and welding of pipe line, site guniting and concreting work, refilling of trenches with available excavated stuff shall be done. For bedding only approved quality materials shall be used. Bedding shall be done before laying of pipe line to the desired grade as directed by Engineer-in-charge.

For refilling purpose, approved excavated stuff shall only be used. The refilling shall be done in layers of 15 to 20 cms. Each layers should be watered and compacted properly before the upper layer is laid till the required level is reached. First 2 layers of 15 to 20 cms

shall be free from stones or chips or any harmful material, to protect the pipe from damage. Only soil or soft murum shall be used for filling. Originally filling shall be done 30 to 40 cms above natural ground or road level. Sinking below the road or ground level, if noticed till the completion of work, the contractor shall have to make it level at his cost.

This item includes..

- a) Clearing useful excavated material of rubbish bracking clods, stone, etc.
- b) Conveying the useful excavated material upto 500 M and filling in layers, watering and compacting.
- c) All labour, equipment and other arrangements necessary for the satisfactory completion and completion of the item.

After water tightness test etc. the trench shall be refilled in layers and shall be rammed manually. The filling shall be kept above ground level for subsequent settlement. In the case of trench in rock, cushioning from approved excavated materials shall be provided at sides and 0.30 m. on top of pipe line by manually to avoid the damages to the laid pipes. The item includes free lead of 50 meters for actual operation. After refilling of trenches, it shall be watered and compacted satisfactory by the roller as directed by Engineer-in-charge.

The contractor shall have to cart the selected excavated stuff from site of work to any other site for refilling as per requirements as directed. The payment shall be made to contractor under relevant item No.11 for disposal in Schedule 'B'.

**Mode of Payment :-**

The payment of refilling shall be made to the contractor only after completion of water tightness satisfactory test etc. of the pipe line. The measurement of work shall be taken in cubic meter up two place of decimals. Mode of measurement and payment of the rate shall be for a unit of per Cum of compacted trench filling with approved excavated material.

The measurement shall be net for the compacted filling and no deduction for shrinkage or voids shall be made. However, deduction for pipe volume will be made. Depth of filling for measurement will be limited from natural ground level only. No payment will be made for filling for 30 to 40 cms above natural ground level, if so insisted by the Engineer-in-charge.

Surplus excavated material will be the property of Municipal Council. So contractor is not empowered to sell this excavated material to any other agency.

This disposal will not be considered for initial 500 M lead from edge of pipe line trenches and so will not be paid for.

The material shall be conveyed by means of suitable devices/manner.

The material conveyed to the place of disposal shall either be stocked or spread as directed by Engineer-in-charge or his representative.

The route opening and maintenance, payment of any royalties, compensation to land

owners and for damaged of any etc. during the process of conveyance etc. shall be the entire responsibility of the contractor.

**2.19 Filling in plinth and floors/trenches with contractor's murum**

For bedding, material shall be got approved by Engineer-in-charge. Shall be used. Bedding shall be done before laying of pipes to the desired grade, line and level with necessary watering and compaction etc. complete. This shall be executed when B.C. Soil and hard rock met at the bottom of trench for certain length. The filling in trench around the pipes and 0.30 m on top of pipe line shall be done in B.C. Soil and rock as directed. The item includes lead beyond 0.50 kms. And lift as required.

If the approved quality of murum is available within 5 Kms. Lead at any of work, the same shall be used for bedding and refilling as directed by Engineer-incharge. The payment shall be made as per relevant item No.11 of disposal in Schedule 'B' this can be possible only, if the execution of work is done simultaneously at more site.

**2.20 Dewatering the excavated trenches and pools of water.**

The item excavation included normal dewatering i.e bailing out water manually and diversion of water however during excavation when it is not possible to bail out the water manually, the separate dewatering item is introduced which includes all machinery, fuel, labour etc. The contractors shall provide all dewatering pumps, engines and machinery required to keep the trenches dry laying sewer lines, drains or foundations and all other excavations shall be clear of water, whether sub-soil water, storm water leakage from tanks, wells drains, sewers water, mains, tide water etc. so that there may be no accumulations of such water. And that no setting out may be done the pumping shall be continued so long after execution of any portion of work and repeated so after as the Engineer-in-charge may determine to be sufficient at any particular time, or he may himself supply pumps and power at contractor expenses, so he may stop the work all together until he is satisfied and also impose a fine upon the contractor. It is the contractor's responsibility to keep dewatering machinery in up to date working condition to keep the trenches dry for laying pipes or for placing the concrete.

**Mode of Payment:-**

25% payment will be released after completion of 50% work & remaining 75% shall be made after completion of Work, in a zone. The day to days basis record for use of pumps (HP/ hrs) for dewatering with sign of Engineer- In charge shall be maintained by Contractor to support the quantity claimed in RA bills. However the payment will be made, in proportionate with the quantity of work executed as above. Maximum quantity of dewatering will be considered hot trunk sewer line in nalla bed and rest of the quantity will be considered for laterals, as directed by Engineer-in-charge.

**2.21 Providing and fixing manholes frame and cover cowl**

**2.21.1 Type Ventilators**

The cost of providing the above item is included in tender item. These are to be properly fixed at place and manner as directed, painting with two coats of anticorrosive black paint is also included in this item. If locking arrangement are required they shall be done by Contractor as directed without any extra cost.

## **Mode of Measurement**

This item will be measured and paid as per unit basis.

### **2.22 Rubble Stone Soling**

#### **General**

After the structural foundation, plinth construction and filling are completed, rubble soling of specified thickness shall be laid over the consolidated plinth filling, hand packed and compacted. The specification of the work as per Standard Specification Bd.A-12)

#### **2.22.1 Materials**

The stones to be used shall be broken rubble with fairly regular shape and free from weathered, soft and decayed portion. The rubble shall be of sound stones of the type mentioned in the item and selected for their larger size. Stones shall be of the full height of the soling and the length and width shall not generally exceed 2 times the height. The stones to be used for wedging in the joints between larger stones, shall be chips of the largest size possible to fit in the interstices. All sound and suitable rubble obtained from the foundation excavation and approved by the Engineer shall be necessarily made use of first unless otherwise directed.

#### **2.22.2 Construction**

The bed on which rubble filling is to be laid shall be cleared of all loose materials, leveled, watered and compacted and got approved by the Engineer before laying rubble soling.

Rubble soling shall be laid to the specified thickness closely packed by hand and firmly with their broadest face downwards. The interstices between adjacent stones shall be wedged in with stones of the proper size and shape and well driven in with wooden mallets to ensure a tightly packed layer. Such wedging shall closely follow the placing of the larger stones. After hand packing and wedging, compaction of the soling shall be done thoroughly with logrammers. Adequate care shall be taken by the contractor while laying and compacting the rubble soling to see that the masonry or any part of the structure is not damaged. Rubble soling shall be started only after the masonry is fully cured.

#### **2.22.3 Broken Rubble**

- a) Supplying broken rubble of approved of approved quality and size at site.
- b) All labour, material, tools and equipment for handling, laying, hand packing and compacting the rubble.

Any other incidental charges to complete the work as per sanctioned plan.

## **Mode of measurement & payment**

Rubble soling shall be measured and paid in cubic meters limiting the dimensions to those shown on the drawings or as directed by the Engineer. The dimensions shall be measured correct to 2 places of decimals of a meter and quantities worked out correct to 2 places of decimals of a cubic meter. No deduction shall be made for voids.



#### **2.22.4 Providing Fusion Bonded Epoxy Coating**

Providing fusion bonded epoxy coating to reinforcement bars as per ASTM-755 specification for a thickness of 175 (+50) microns including extra cost on account of careful handling, extra cost on account of using PVC coated binding wire instead of G. I. wire, extra cost on account of touch-up material supplied by coating agency and repair work extra cost account of transportation to and fro from steel yard at ----- to ..... plant and Plant to work site by trailer, loading, unloading, including all taxes (Central and Local), etc. complete

#### **Mode of measurement and payment**

The item shall be measured and paid in weight per MT basis.

#### **2.23 Murum Bedding**

##### **2.23.1 General**

The specification contained in the Standard Specification Volume-II published by Public Works and Housing Department, Govt. of Maharashtra, Chapter Bd.A-10, Page 263 shall apply. In addition to above, following specifications shall govern.

Murum bedding shall be done with approved quality of soft murum, selected from excavated stuff and approved by the Engineer-in-Charge. The murum shall be collected from available excavates stuff and to be utilized if murum is not available from selected excavated stuff, it should be brought from outside and rates payable will be as stipulated in the tender item. Thickness of murum bedding will be 15 cm.. The contractor shall be paid for one Cubic Meter of the filling laid and compacted and will be paid upto two place of decimal of Cum. Murum bedding shall be laid in exact 15 cm thickness for full width of excavation, it shall be well rammed with hand rammers so that pipe line is laid on firm bedding. Collection of murum from excavated stuff and carting upto the work site is included in the item and contractor shall make his own arrangement for procurement and carting of murum at his cost.

#### **Mode of Measurement and Payment**

Quantity shall be measured in Cubic Meter. The dimensions shall be measured upto two Decimal of Cubic meters and quantity shall be calculated upto two places of Decimal of Cubic meter. Payment for murum bedding will be made after lowering, laying and jointing of the pipe.

#### **2.24 Disposing of excavated stuff**

- 1) After refilling of trenches, surplus excavated stuff remaining at the site of work have to be disposal off at suitable places within five Km to 10 km distance or as directed by Engineer-in-charge.
- 2) Surplus excavated materials is the property of SCDCL. and therefore contractor is not empowered to sell this excavated materials to any other agency.
- 3) This disposal will not be considered for initial 50 M. lead from site of work, so will not be paid for
- 4) The materials shall be conveyed by means of suitable devices.

- 5) The material conveyed to the place of disposal shall either be stacked or spread as directed by Engineer-in-charge or his representative.
- 6) The route for operation and maintenance, payment of any royalties, compensation to land owners and for damages if any etc. during the process of conveyance etc. shall be the entire responsibility of the contractor.
- 7) This item includes all labours, materials and equipments required for loading, conveyance, unloading, stacking or spreading the material.
- 8) The tender rate shall be for one cubic meter of excavation quantity conveyance to the place of disposal.
- 9) The quantity conveyed and disposed of shall be calculated from the trench excavation after deduction of quantities for bedding, concrete or any other refilled materials and balanced net excavation quantity will be payable under this item.

#### **2.25 Open timbering in trench.**

The item shall comply as per relevant item of Schedule 'B' as per standard specification of latest Edition of Red Book and N.B.O. Item No.4, 15 page No. 59. This item shall be executed with prior permission of Superintending Engineer.

When the depth of trench required to be excavated is more than 1.5 M. and the strata met with is unstable, timbering of trenches shall be done to prevent caving or collapse of side walls. Precautions to prevent extensive caving shall be adopted for minimizing danger when the depths exceed 1.5 m as stated above. Only in such cases, the timbering shall be done from top to bottom of the trench.

The sheeting and the other members like polling Boards, struts walling shall be strong enough to withstand against the soil pressure. Timbering shall be done only at the required places. The location of timbering is required to be carried out shall necessarily be approved and finalized by competent authority. Timbering unnecessary provided shall not be measured and paid for. The contractor shall take photographs of timbering work done by him at his own cost and shall be submitted to the Department from time to time.

##### **2.25.1 Shoring :-**

Wherever shoring may deemed necessary by the Engineer-in-charge the contractor shall provide the same in the best possible manner with the best materials and to the satisfaction of the Engineer-in-charge. The contractor shall employ such kinds or kinds of shoring as the Engineer-in-charge any consider the exigencies of the work of require and it is to be distinctly understood that the work „shoring is to comprise all clauses of such work and all appliances and appurtenances including polling boards, sheet piling of runners (Whether the joints be butt, groove and tongue, feather edge and groove, birds mouth and double splay, rebated or otherwise), together with walling struts prop, point blank shores, blocks, wedges, iron dog, bolts, screws, nails and everything that may be required for due execution of the work. No part of the shoring shall at any time be removed by the contractor without obtaining permission from the Engineer-in-charge. While taking out shoring plank the hollows if any, formed must simultaneously be filed in with of earth well rammed with rammers and with water.

##### **2.25.2 Shoring left in trenches :-**

The Engineer-in-charge may order portions of shoring to be left in the trenches at such places, where it is found absolutely necessary to do so as to avoid any damages which may

be caused to building cables, gas-mains water mains, sewers etc. in close proximity of the excavation, by pulling out the shoring from the excavations. No extra payment shall be made to the contractor on account of shoring left in trench.

**2.25.3** Engineer-in-charge may put up or improve shoring :-

In the event of the contractors not complying with the provisions of this contract in respect of shoring, already put up or adopt such other measures as he may deem necessary and all the cost of such procedures adopted by the Engineer-in-charge shall be borne by the contractor.

**2.25.4** Liability for Timbering :-

- a) No work done by the Engineer-in-charge or his workmen for the fact that the timbering has complied with his specification shall absolve the contractor from his responsibility and he will be responsible for making good any damage caused as a result of the timbering failing to give proper support to the sides of the Excavation.
- b) The timbering to the sides of excavation for structures shall be carried out in such a way that there is no obstruction caused to the work. The supporting struts and walling shall be removed by the contractor in stages to suit the progress of work.
- c) If the Engineer-in-charge is not satisfied that the standard of timbering is equal to that the sides of the excavation have not been secured in a manner to render such excavating safe for working, he may, one hour after notifying the contractor or his representative in writing, employ his own men to alter the timbering and the cost of such workman and materials employed shall be paid for by the contractors.

**2.25.5** Contractor's responsibility for secure shoring and or all damages:-

The contractors will be held responsible for providing secure shoring and for adopting every other precaution which may be necessary or proper for protecting and building which may be damaged or be liable to damage by the excavation of any trench or otherwise by the excavation of the works in the vicinity of such building. If the Engineer-in-charge shall require the adoption of any special or extra measures or precautions the contractors shall forth with adopt & supply the same but this proportion is not to be read or understood as in any degree of relieving the contractors from responsibility or from liability under relevant clause contract, in respect of claims made against the department by for loss or damage which may be caused to any such building by the excavation of any of the works or otherwise. After the work is completed near buildings, the contractors shall remove any shoring and make good any cutting out or other damage that may have been done.

**Mode of Payment:-**

The item shall be measured and paid for on square meter basis. The area shall be calculated by considering the length and height of open timbering and shoring provided for each side of trench separately. The timbering shall be paid to the extent of 85% only after its objective of protecting the excavation till the lowering, laying, jointing, testing of the sewer line is completed and the section is refilled. 15% payment shall be made after the zone is completed.

**2.26** Providing and constructing 100 mm dia. C.I. Pipe ventilator.....etc. complete.

The item is provided for escape and ventilation of the gasses formed in the system.

This includes required excavation in any strata in all lift, providing, laying, erecting and jointing 100 mm dia C.I. soil vent pipe of length 6 m. providing P.C.C. 1:2:4 base at bed and block/ of size cement concrete in M-150 size grade 0.45 x 0.45 x 2.00 m. height as shown in the drawing attached, 12 mm thick plaster in C.M. 1:3 proportion shall be provided to the concrete block. The item also includes providing and fixing wire gauge dome vent pipe. In case of any discrepancy in drawing and the specification, the decision of Engineer-in-charge shall be final and binding on the contractor. The location shall be given by the Engineer and the item shall be paid on number basis.

## **2.27 Reinstating the road surface**

Contractor shall restore the roads excavated for trenches for laying the pipe lines, constructing chambers and structures etc. The width of the pavement restoration along the normal trench for the installation of the sewer line shall not exceed the width of the trench plus 250 mm on each side of the trench. It is expressly clarified here the excavation for laying the other services will be done alongside the sewerage line and trench for laying the sewerage line and its restoration may overlap with restoration required for other trenches i.e for water supply, storm water, utility duct etc. Contractors shall co-ordinate with other agencies and Engineer in-Charge and plan the sequence of road restoration required for different items under this contract or sequence and extent of restoration required depending on the works undertaken by other agencies. Engineer in-Charge decision in this regards shall be final and binding on Contractor. The Bill of Quantities of road restoration for trenches sewerage line are provided for average width of 2.12 m (including trench). However as clarified above, in the event, trench for sewerage overlaps with other trenches, the measurement for restoration shall be recorded deducting the overlapping width depending on the site condition. Furthermore it is assumed in the estimate that restoration of 70 % of road shall be done by bituminous pavement and 30 % of road shall be done in concrete pavement.

The estimated quantities of road restoration may change due to overlapping of trenches, actual percentage of pavement type during execution however variation in rate shall not be applicable for change in quantities due to any reason.

### **2.27.1 Bituminous Roads**

Reinstating the cut asphalt Road by providing, laying, spreading and compacting the following works.

8. Subgrade - Construction of subgrade and earthen shoulders( Construction of subgrade and earthen shoulders with approved materials obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2).Spec. No. MORTH -305 -

Sub grade will be provided within trench width with material suitable as specified above. Thickness of sub grade shall be 500 mm.

9. Construction of Granular Sub-Base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader / Paver on prepared surface and compacting with vibratory power

roller to achieve the desired density, complete as per clause 401 -- Plant Mix Method and Grading - II Material. Thickness of Granular Sub Base (GSB) shall be 150 mm

10. Wet Mix Macadam -- Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. Laying By Grader/Paver. Thickness of Wet mix Macadam (WMM) shall be 250 mm

11. DENSE BITUMINOUS MACADAM:--Providing and laying dense bituminous macadam using crushed aggregate of grading 2, premixed with bituminous binder, @ 4.50 % by weight of total mix and filler, transported at site with VTS, laid over a previously prepared surface , finished to the required grade ,level, alignment, and rolling to achieve the desired density for 50/75 mm compacted thickness with drum mix type hot mix plant with SCADA having complying essential features of Hot mix plant as per IRC-27-2009 specified conditions and attachments such as electronic load sensor based belt conveyers, automatic synchronization of bitumen and aggregate feeder, built in dust controller system and PLC for Drum Mix plant , Sensor paver, and Vibratory roller excluding prime/Tack coat etc. complete -- Bitumen VG-30/VG 40 grade with stone dust. Compacted thickness of Dense Bituminous Macadam (DBM) shall be 60 mm.

12. BITUMINOUS CONCRETE:--Providing and laying bituminous concrete using crushed aggregate of grading 2, premixed with bituminous binder @5.4% by weight of total mix and filler, transported at site with VTS, laid over a previously prepared surface, finished to the required grade ,level, alignment, and rolling to achieve the desired density for 30/40 mm compacted thickness with drum mix plant with SCADA, Sensor paver and Vibratory roller excluding prime/Tack coat etc. complete -- Bitumen VG-30/VG 40 grade with stone dust filler. Compacted thickness of Bituminous Concrete (BC) shall be 40 mm.

13. Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.25 kg/sqm on the prepared bituminous/granular surface cleaned with mechanical broom. etc. complete.( Spec. No. MORTH-503)

14. Providing and applying primer coat with bitumen emulsion on prepared surface of granular base including clearing of road surface and spraying , primer at the rate of 0.6 Kg/sqm using Mechanical means. etc. complete ( Spec. No. MORTH 502)

The contractor will ensure that the entire work along with all its installations is in a finished and in new and fully operative condition when handed over. He shall have repaired and remove all signs of damage that might have been done during the course of installation and fixing of equipment. He shall also see that the entire exterior has been finished properly and the entire site is cleared of all extra construction material, debris, and excavated soil. This shall have to be done to the satisfaction of the Engineer-in-charge in Charge. If any item not mentioned but required for satisfactory completion & commissioning, same will have to carried out without extra claims.

The Contractor shall restore the Road after laying, jointing and testing of pipeline without

giving scope to delay in Road restoration. For smooth flow of traffic / pedestrian, the cut Roads shall be restored upto granular sub base excluding bituminous work. After proper rolling and clearance obtained by the Engineer-in-charge, laying of bituminous surface shall be carried out. In case the Contractor keeps the Roads un restored more for than 1Km and fails to restore the Roads on temporary and emergency basis then pipe laying shall not be allowed further and delay will be attributable to Contractor, appropriate penalty shall be imposed for delay in Road restoration and pipe laying work etc. Payment will be made to the contractor for the restoration of Roads as per the relevant Items of BOQ.

### **2.27.2 Concrete Roads**

Contractor shall restore the concrete roads with following specification:

1. Subgrade - Construction of subgrade and earthen shoulders( Construction of subgrade and earthen shoulders with approved materials obtained from borrow pits with all lifts and leads , transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2).Spec. No. MORTH -305 -

Sub grade will be provided within trench width with material suitable as specified above. Thickness of sub grade shall be 500 mm

2. Construction of Granular Sub-Base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader / Paver on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401 -- Plant Mix Method and Grading - II Material. Thickness of Granular Sub Base (GSB) shall be 150 mm

3. Construction of dry lean cement concrete Sub- base over aprepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, , cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant/ Weigh batch mixer, transported to site with all leads and lifts, laid with a paver with electronic sensor /by suitable means as approved by Engineer in-charge , compacting with vibratory roller, finishing, curing and including preparation of sub-grade surface if required etc. complete. Thickness of Dry Lean Cement Concrete (DLC) shall be 100 mm.

4. Providing and laying in-situ M40 Grade unreinforced plain cement concrete pavement over a prepared sub base with 43 grade cement ,coarse and fine aggregate conforming to IS 383, using fine and coarse aggregates combined gradation as per Table 600-3 of MORTH Specification 2013, mixed in a batching and mixing plant/ non tilting mixer and Weigh batcher as per approved mix design, admixtures, transporting to site, spreading, laying with approved make paver, compacted and finished in a continuous operation, finishing to lines and grades as directed by Engineer-incharge and curing by curing compound /by providing cement vata in cement Mortar 1:8 @0.6m X 0.6m centre to centre, admeasuring 80 mm at bottom and 40 mm at top with depth of 75mm and maintaining the same throughout curing period . Thickness of Pavement Quality Concrete (PQC) shall be 280 mm.

**2.28** Repairing the damaged cables of telephone, water supply pipe lines etc during the trench excavation for sewage collecting network including cost of material required for repairs pipe, specials etc including excavation and refilling etc complete per km of completion of laying of sewer laterals and trunk mains.

**2.28.1 Damages to Services:-**

The work of excavation shall be proceeded very carefully by the contractor. Before actual excavation trial trenches shall be carefully taken by the contractor for assessing the services e.g. water mains, drainage lines, telephone and Electrical cables that are likely to be encountered in the excavation of pipe-line trenches. The trial trenches shall not be paid for separately. After assessing the alignment and level of other services, the contractor shall get approved the exact alignment from the Engineer and proceed with the work accordingly. Any damages to the private and Government properties shall be reinstated by the contractor .If any damages are caused or likely to be caused, The contractor shall remove the service connections from water mains and re-do them as directed by the Engineer-in-charge. This shall be done with least inconvenience to the connection holder and without any extra cost for any diameters

Item includes:-

- 1) All type of excavation for repairs of damages of telephone cables, electric lines, water mains up to 100 mm dia
- 2) All type of materials pipes, specials jointing materials such as M.D.P.E, C.I.D. Joints, couplers rubber rings , rubber sheet nut bolts etc up to 100 mm dia  
If water mains of R.C.C./A.C./C.I./G.I./M.S./PVC/D.I. etc. of diameter more than 100 mm and above are encountered the contractor shall relay such lines to keep service continued as directed by the Engineer-in-charge, If in the opinion of the Engineer, it is possible to obviate such mains, the contractor shall realign the pipe line in tender scope as directed by the Engineer-in-charge without any compensation for the excavation discarded by the SCDCL.

The pipe and special required for shifting/relaying of mains shall be supplied by the SCDCL free of cost for dia above 100 mm if available with the SCDCL. If such required materials are not available with the SCDCL, the special materials as directed by the Engineer-in-charge shall be procured by contractor and shall be payable to him. The payment of such materials shall be regulated at mutually decided rates based on reasonable markets rates or CSR prevailing at the time whichever is less. The contractor shall procure the materials without waiting for finalization of rates in order to meet the urgency. Proper account of the materials shall be kept by contractor.

All the labour and materials charges shall be payable to the contractor only when continuous length requiring shifting / relaying of mains of dia of above 100 mm exceed 5 m. The basis for such payment shall be the rates of respective works terms covered in Schedule 'B' of the tender for the items available in the tender or rates derived from tendered rates for similar items. In case of item not covered in Schedule 'B', the prevailing C.S.R. shall be applicable. For the relaying / shifting work involving dia above 100 mm in continuous length below 5 m. no labour and material charges (except pipes and specials) shall be payable. No any material or labour charges will be paid to the contractor which damages of pipe line below 100 mm.

**Mode of payment:-**

The item shall be measured and paid for on kilometre / Running meter length basis. The length shall be considering the actual length of sewer laterals / trunk main network completed and hydraulically tested by contractor. All the damages and repairs are carried out by contractor

**2.29 Providing and reinstating the tar / Concrete road**

Reinstatement of tar/concrete roads shall be done as per Clause 2.30 above.

**DETAILS SPECIFICATION**

**Specifications for Sewerage Collection System**

**SPECIFICATION**

**2.30 DWC Pipes:**

The pipes and fittings shall be manufactured out of virgin PE material as per ISO 21138 - 2007 or latest edition. The pipes shall be manufactured out of PE 100 grade compounded resin. The factory testing of pipes shall be carried out as specified in ISO 21138.

The resin used shall be tested through third party inspection agencies like Bodycote and according to the specification for the resins.

No recycled material shall be used in manufacturing.

The stiffness class as mentioned in the BoQ shall be followed.

The jointing material shall be SBR or EPDM rubber ring with socket and spigot type of joints.

The laying and jointing shall be carried out as per relevant IS - 16098 duly applying the following sections

**DWC Pipes for use in underground Sewerage System**

**Technical Specification**

Class SN 8 Structured Double Wall (Non-Smooth External Annular Corrugated wall & Smooth Internal wall) Polyethylene Piping System for non-pressure underground Sewerage & Drainage Applications

**2.30.1 Scope**

This specification covers the requirements for manufacturing, supplying, transportation, handling, stacking, installation, jointing, and testing of Class SN 8 Structured Double Wall (Non-Smooth External Annular Corrugated wall & Smooth Internal wall) Polyethylene Piping System for non-pressure underground Sewerage & Drainage Applications herein after called the DWC PE Piping System.

**2.30.2 Applicable Codes**

The manufacturing, testing at factory, supplying, transportation, handling, stacking, installation, jointing, and testing at sites shall comply with all currently applicable statutes, manuals, regulation, standards & codes. In particular, in addition to all relevant National Standards, following International standards with latest revisions shall be referred. If



requirements of these specifications are at variance with any other standards, this particular document shall govern the proceedings.

**I) EN 13476-1**

Plastics piping Systems for non-pressure underground drainage and sewerage Structured-wall piping systems of Polyethylene (PE) Part 1 : General requirements and performance characteristics

**II) EN 13476-3**

Plastics piping Systems for non-pressure underground drainage and sewerage Structured-wall piping systems of Polyethylene (PE) Part 3 : Specifications for pipes and fittings with smooth internal and profiled external surface and the system, Type B Other International Codes / Standards (EN/ ISO) which are integral part of above two standards as normative references form a significant portion of this specification document.

**2.30.3 Manufacturing**

The DWC PE Piping System of stiffness class designation SN 8 shall conform to the

European Union standards as mentioned above and shall be configured as per the indicative Cross-sectional Drawing annexed herewith. Each pipe shall be coupler (on-line or off-line) and spigot type along with rubber sealing ring (as designated under above international specifications)

**2.30.4 Transportation**

The arrangement of loading the pipes in a telescopic manner is advised, i.e. smaller diameters inserted into the next higher sizes of pipes. While loading the pipes onto the truck, care should be taken that the coupler- end should be arranged alternatively in the corresponding layers so as to avoid the damage to the coupling/ socket ends.

**2.30.5 Handling**

Following Recommendations shall be followed while handling the pipes: Adherence to National Safety requirements Pipes to be smoothly lowered to the ground Pipes should not be dragged against the ground to avoid the damages to the Coupler/pipes. 800mm and larger diameter pipes are carried with Slings at two points spaced approximately at 3 Meters apart. For smaller diameters one lift point shall be sufficient & can be handled either manually or mechanically. Do not use a loading Boom or Fork Lift directly on or inside pipe.

**2.30.6 Pipe Storage at Site**

Stockpiling shall be done temporarily on a Flat Clear Area as per Fig. 1 & 2. For avoiding collapse of Stacks, use Wooden Posts or Blocks Stacking shall not be higher than 2.5 Meters While stacking, alternate the socket/coupler ends at each row of stacked pipes as per Fig. 2. Lowering, Laying & jointing of Pipes The width of a Sewer Trench depends on the soil condition, type of side protection needed and the working space required at the bottom of Trench for smooth installations. Increase in width over required minimum would unduly increase the load on pipe and cost of road restoration. Considering all above factors, the

In actual practice the trench width can be as narrow as possible but adequate to allow the workmen to execute the job satisfactorily. The pipe segment between two manholes shall be laid approximately in straight line without any vertical undulations. However, on the

strength of its flexibility, the DWC PE Piping system can be laid in very smooth curve if found necessary. The piping system shall rest on the carefully prepared bedding portion of the Backfill Envelope (ref fig. III, Annexure I) and at appropriate jointing locations the trenches shall be excavated deeper to accommodate the bulges of coupler-spigot joints. However, special care shall be ensured as mentioned below:-

Excavation of trenches shall be carried out in accordance with the drawing & specifications and as directed by the field engineer as well. The piping system shall be laid and jointed in true to gradient with the help of sight rails and boning rods as detailed in CPHEEO, MoUD, GoI Manual on Sewerage and sewerage treatment. The levels need be checked with calibrated modern Leveling Instrument. Specific care shall be taken to prevent entry of sand / mud /slush/ any other foreign material etc into the system during the installation operation. The structural property of the system suggests that a minimum cover of 300 mm adequate even for maximum quantum of superimposed (live) load. In case of wider trenches than required (above table), the permission of the competent authority shall be necessary.

The bedding area (ref. fig. III) is an essential portion of Back fill Envelope and shall be constructed with proper bedding material as computed in accordance with appropriate international code of practice for structural bedding design mentioned in the list of normative references under EN 13476. The bedding shall be laid to specified thickness and gradient with proper manual compaction of the aggregate.

The molded on-line coupler (or separate coupler integrated to the pipe in case of lower sizes) will have a suitable internal surface for push-fitting the said end over the spigot end of the next pipe. On first valley of the corrugation of said spigot end (destined to receive the pushed coupler) the sealing rubber ring of standard (EN 13476) quality shall be placed so that the coupler end of the pipe smoothly but tightly slides over the sealing ring for making an absolute watertight joint. Similar system is also used for fabricated accessories or moulded fittings required such as Tee, Bends, Elbows, Reducer end caps for the purpose of installation of the system related to drainage/sewerage.

#### **2.30.7 Jointing**

For quality connections following steps are to be ensured, failing which the performance aspects are to be severely compromised:-

The non-coupler (socket) end needs to be thoroughly cleared and shall be free from any foreign material Clean and lubricate the coupler end of the pipe, if required. Lubricate the exposed Gasket in the same manner, if required. Keep the non-coupler end free from dirt, backfill material, and foreign matter so that the joint integrity is not compromised. Push the coupler into non-coupler and align properly. Always push coupler end into non-coupler end. For smaller diameter pipes simple manual insertion shall be sufficient. It should be ensured that the coupler end to ensure installation and tight joining seal. Therefore prior to insertion always place 'homing mark 'on appropriate corrugation of non-coupler end. Construction of backfill envelope and final backfilling of the trenches DWC PE Piping System with well compacted Backfill Envelope along with the bottom and sides of trench (native soil) work together to support soil overburden and superimposed (traffic) loads. The carefully constructed Backfill Envelope has three distinct but non-isolated stages (Ref. enclosed C/S Drawing III, Annexure I).The construction need to be done stage by stage as per the sequence stated below:

- Bedding portion
- Up to Haunch level
- Remaining portion

The material for backfill envelop shall be in accordance with the structural design of flexible buried conduit as per relevant international codes mentioned in the list of Standards as normative references of EN 13476 /1 & 3. It can be the same material that were removed in the course of excavation or it can be fine sand/course sand/gravel / moram /other form of course / fine aggregates depending on the effected Design Load [Overburden + Superimposed (Live) load]. However, in no circumstances, the flexible pipe should not be embedded in cement concrete (un- reinforced or reinforced) which invariably induces undesired rigidity in the system. The remaining portion of backfilling which do not contribute to the structural integrity of the system may be the materials that were removed in the course of excavation or any other foreign material as may be required to suit the particular site condition. These materials shall consist of at least clean earth and shall be free from large clod or stone above 75 mm, ashes, refuse and other injurious materials. After completion of laying of pipes, etc, first the Backfill Envelope shall be constructed as per design around the pipe. Voids must be eliminated by knifing under and around pipe or by some other indigenous tools. The compaction, by hand rammers or compactors with necessary watering to a possible maximum level of proctor density shall be ensured. Backfilling shall start only after ensuring the water tightness test of joints for the concerned sewer segments. However, partial filling may be done keeping the joints open. Precautions shall be taken against floatation (if at all necessary) as per the specified methodology and the minimum required cover.

#### **2.30.8 Continuity Test /Hydraulic Testing**

Continuity of the pipe segments in between two manholes is required to be ensured in the same modality as practiced for non-pressure RCC pipeline. Hydraulic testing of pipes shall be done. The procedure for hydraulic testing shall be similar to that for non-pressure RCC pipes. Hydraulic testing of pipes shall be done, if specifically asked for by the client for any specific stretch. The procedure for hydraulic testing shall be similar to that for non-pressure RCC pipes.

#### **2.30.9 Measurements:**

The lengths of pipe shall be measured in the running meters nearest to a cm as laid, lowered and jointed from inside of one manhole to the inside of the other manhole. The length shall be taken along the entire line of the pipes. All fittings such as bends, junction, etc., shall not be measured separately. Excavation, refilling, shoring and timbering in trenches and cement concreting wherever required shall be measured separately under relevant item of work.

**2.30.10** Security money for testing should be kept at 10 % of the value of the work. After testing of the complete sewerage system to the satisfaction of the engineer in-charge the same shall be released.

#### **2.31 R.C.C Pipes**

The relevant item shall comply as per Schedule 'B' Contractor shall provide R.C.C. S/S Pipes of required diameter and class in standard length as per schedule conforming to latest version of I.S. 458 and the materials required for manufacturing of pipes such as cement

shall conform to I.S. 269 of latest version, sand or fine aggregate and coarse aggregate shall conform to I.S. 383 of latest version reinforcement shall conform to I.S. 432,1786, 1566, 1139, and 226 of latest version R.C.C. work shall conform to I.S. 456 – 2000, and rubber rings shall be conform to latest version I.S. The contractor shall supply all the latest I.S. codes related to this item to the Department at his cost.

The pipes supplied by the contractor shall be transported from factory & stacked along the alignments of the line in such a way that no hindrance is created to the traffic / pedestrians. Cracked / damaged pipes shall be rejected outright. Damaged pipe shall not be allowed to be transported at work site. If it happens contractor shall be penalized for such activities in terms of fine as decided by the Engineer-In-Charge. Contractor should take prior permission from Engineer - in - charge before placing the order for RCC pipes. The work is to be carried out zone by zone and in no case pipes required for other zones than the one in which work is going on shall be ordered or brought to site. The work in one zone shall be completed including house connections, commissioned and then only the work for other shall be taken in hand.

After supply of R.C.C. Pipes and collar joints and if specified , rubber rings at the site of work by the contractor, the same material shall be issued to the contractor on “Unstamped Receipt.” Record of consumptions and balance shall be maintained and shall be kept in the custody of Department. One rubber ring shall be supplied with each full length of socketed pipe at the site of work and the contractor at his own cost shall submit certificate of testing for the same. The contractor at his own cost shall keep the material at site with chowkidar. The site Engineer can check the balance material any time at site store of the contractor, if any shortage is found, the cost of Short materials with penal rate shall be recovered through R.A. Bill of contractor in single instalment without any excuse after the pipes are supplied by the contractor, the responsibility of security and safety shall still rest with the contractor till the pipes are laid, jointed and tested commissioned and the work completed and taken over by the MC.

The pipe shall be laid to line, levels and slopes as indicated on the drawings or as directed by the Engineer, Sight rails or levelling instruments in sufficient numbers shall be provided for this purpose by the contractor.

The handling laying of the concrete pipes shall conform to IS – 783– 1959 (relevant para) The joints shall be done as per paragraph 10.2.3.1 of I.S. 783 – 1959. Any pipe damaged during laying shall be replaced by the contractor at his cost proper alignments tools and facilities shall be provided by the contractor for lowering the pipes, fittings in to trenches to prevent damage. Dumping shall not be permitted. Chain pulley block may be used for pipes above 300 mm. diameter.

No materials shall be supplied by MJP for manufacturing of R.C.C. pipes and any other allied works. .

The pipe shall be inspected, as per relevant latest I.S.S. by Third Party Inspection (TPI) agency approved by the ULB and enlisted with MJP and certificate to that extent shall be produced by the contractor. The charges of TPI are deemed to have been included in the rates. The payment of RCC Pipes shall not be made till receipt of TPI certificate. The seal of TPI agency shall be embossed inside portion of each pipe after inspection including the

details such as date of manufacturing, batch no. class and diameter of pipe and name of ULB.

**2.31.1 Sight rails and boning staves:-**

In laying the pipe sewers, the center for each manhole must be marked by a peg, or otherwise, as may be determined by the Engineer. The contractors are then to dig holes for and set up two posts (about 100 mm x 100 mm x 1800 mm) at each manhole at nearly equal distance from the peg and a sufficient distances there from to be well clear of all intended excavation, so arranged that a sight rail when fixed level against the post will cross the center of manhole. The posts must also be so set up that the longitudinal direction of the rail may be as clear as possible of the direction of any of the lines of pipes or drains converging to the manhole. If walls of building afford suitable means of fixing the sight-rail, the post may, however be dispensed with. The sight rails must not in any case be more than 30 M. apart.

Intermediate rails therefore are put up if necessary.

**2.31.2 Construction of boning staves:-**

Boning staves shall be prepared by the contractor about 75 mm x 50 mm made of a square section of various length, each length being of a certain fraction of meter and with a fixed tee – head and a fixed intermediate cross piece, each about 300 mm. long. The top edge of the cross piece must be fixed at distance below the top edge of this tee-head, equal to as the case may be, the outside diameter of the pipe or thickness of the concrete bed to be laid. The boning staff must be marked on both sides to indicate its full length. According to the circumstances of each case, a suitable length of boning staff will be determined upon, and the reduced level of the bed of the pipe or bottom of concrete of drain at each added to the selected boning staff will be marked by a horizontal line on both posts, or on walls or fences to which the sight-rail is to be fixed.

**2.31.3 Sites Rails:-**

- a) The sight-rails (about 25 cm wide and 40 mm thick) is to be screwed with the top edge against the level marks. The centerline of the pipe sewer or the drain will be marked on the rail and this mark will denote the meeting point of the centerlines of any converging drains or pipe sewers. A line drawn from the top edge of one rail to the top edge of the next rail will be vertically parallel with the bed of the sewer or drain and the depth of the bed of the sewer or drain at any intermediate point may be easily determined by letting down the selected boning staff until the tee head comes in the line of sight from rail to rail.
- b) The posts and rails are to be perfectly square and smooth on all sides and edges. The rails are to be painted with white oil paint on both sides, and the tee heads and cross piece of the boning staves are to be painted with black oil paint.
- c) If the pipes or drains converging to a manhole coming at various levels, there must be rail fixed for every different level when a rail comes withing 0.60 M. of the surface of the ground, a higher sight – rail must be fixed for use with the rail over the next point.
- d) The posts and rails must in no case be removed until the trenches is excavated, the drains are constructed or the pipes are laid and permission given to proceed with the filling in.

**2.31.4 Laying of RCC Pipes:-**

- a) The pipes are to be laid with socket facing up the gradients beginning at the lower end. No pipe to be laid until the trench has been excavated its required depth for distance of 20 m. in front of the pipe to be laid (This distance may vary as directed by the Engineer In Charge)
- b) All the pipes are to be laid perfectly, both in line and gradient. The pipes in a trench shall be laid and fitted previous to the jointing being commenced.
- c) Properly fitted temporary wooden stoppers shall be provided and constantly used to close the ends of all in completed pipelines. The stoppers are only to be removed when pipes are being laid and jointed.

**2.31.5 Jointing R.C.C. Pipes :-**

- a) Each concrete pipes with the rubber rings accurately positioned on the spigot shall be pushed well into the socket of the previously laid pipe by means of uniformly applied pressure with the aid of a jack or similar appliance.
- b) Concrete pipes of the spigot and socket type with roll on rubber rings shall be used, and the manufacturer's instructions shall be deemed to form a part of this specification.
- c) Rubber rings shall be lubricated before making the joint and the lubricant shall only be soft soap water or an approved lubricant supplied by the manufacture.
- d) In case of R.C.C. pipe entering or leaving a manhole a flexible joint may be provided at least within 0.60 m. from the outer end of the manhole.
- e) A drop in water level of not more than 50 mm in one hour shall be permitted, in case of hydraulic test of manhole.

**2.31.6 All works to be water tight:-**

- a) The drains, manholes and all joints of pipes must be made thoroughly sound and water tight and if any joint which is proved to be leakage at any time during the progress of works or during the contractors subsequent period of maintenance shall be immediately made sound by the contractors at their own expenses. The contractors shall at their own cost prove all works to be water tight for filling it with water to such a height as desire by the Engineer-In-Charge. Any additional precautionary measures or appliances that may be found necessary to ensure the water tight joints of pipes shall be adopted by the contractor without extra charges, the responsibility of making them complete watertight rest with the contractor.
- b) Immediately after the test with the double disc or cylinder has been completed and any defect hereby disclosed have to be made good, the contractor shall prove the joints of the stretch of the under-ground pipe whether of stoneware, Cast iron or R.C.C. Pipes, to be water tight by the filling in pipes with water before filling in the trenches to the level of 1.5 M. above top of the highest pipe in the stretch and heading the water up for the period of one hour of such further time as the Engineer may direct. The apparatus used for the purpose of testing shall be approved by the Engineer. The contractor, if required by the Engineer, shall pump the excavation dry and keep it so during the period of testing. No test applied at part of a stretch when complete. The loss of water over a period of 30 minutes should be measured adding water from a measuring vessel at regular 10 minutes interval, and noting the quantity required to maintain the original

water level. (For purpose of this test, the average quantity added should not exceed 1 liter / hour / 100 liner meters/ 10 of nominal internal diameter.)

Any leakages including excessive sweating which cause a drop in the test water level will be visible and the defective part of the work should be removed and made good. The testing of laid pipeline shall be given as per specification CPHEEO manual for sewer work.

**2.31.7 Inspection of the joints:-**

After the joints of any pipes in underground work have thoroughly set the Engineer (or any person whom he may appoint) may inspect the joints and if he has any doubt at their soundness contractor shall arrange to cut, open and clean away the cement as the case may be of any joint, that he may select and to make good the same at their expense provided that unless defect to be found, they shall not be required to open more than one joint in 20 M. of pipes though if the defect be found the Engineer may direct them to open as many joints as be may seem necessary.

**2.31.8 Cleaning of the pipes:-**

- a) As soon as stretch of R.C.C. pipes has been laid complete from manhole, the contractor shall run through the pipes both back words and forwards a double disc or solid or closed cylinder 75 mm or less in diameter than the internal diameter of the pipes. The open end of an incomplete stretch of pipe line shall be securely closed as may be directed by the Engineer to prevent entry of mud or silt or any foreign material etc.
- b) If, as a result of the removal of the obstruction, the Engineer considers that damages may have been caused to the pipe shall be entitled to order the length to be retest at the expense of the contractor. If such retest prove unsatisfactory, the contractor shall amend the work and carry out such further tests as are required by the Engineer, at his own expenses.
- c) It shall also be ascertained by the contractor that each stretch from manhole to manhole is absolute clear and without any obstruction visual examination of the interior of the pipe line suitably enlightened by the projected sunlight or other means.

**2.31.9 Fracture of Pipes :-**

- a) In the events of pipes being fractured at the time of laying, refilling due to dumping of the material for refilling have been improperly selected or any other causes, the contractor in every instance will be held responsible and will be called up to replace the defective pipes at his own cost, if such defect appears before the expiration of the period of maintenance.
- b) Any pipe or length of pipe found to be defective shall be immediately removed and replaced at the contractors expense, and leaking joints shall be remade, the inspections tests shall then be repeated as often as necessary, until the whole line under inspection or test is accepted by the Engineer.

**2.31.10 All Works to be cleared clean and perfect :-**

- a) The contractor, shall after completion or whenever required by the Engineer, prove all pipes and fittings to be clear, clean and perfect, and for this purpose shall, at their own expense and in the presence of the Engineer, or his appointee provide suitable instruments

and appliances and pass then through the pipes and shall if required, through in water and show that it passed freely through every portion of the work. Brick mortar and rubbish shall not be allowed to fall into the manholes or sewer lines while fixing or if allowed shall be removed by the contractor at their own expenses.

## **Mode of Payment**

### **For Item No., (Supply of Pipes)**

a) The RCC pipes required for completion of one zone shall only be bought. Unless the zone is commissioned and completed, the procurement of pipes in other zone shall not be taken up. 60 % payment will be made against supply of R.C.C. pipes with rubber rings at site along with inspection certificates from TPI agency, 25% payment will be made only after lowering, laying, jointing & remaining 15% payment will be made after satisfactory water tightness testing of the laid pipe line, property connections, and commissioning of the complete zone is completed. The item shall be measured and paid for one running meter length of actual pipeline laid.

#### **2.31.11 Laying of Pipes**

75 % payment shall be made after lowering, laying & jointing R.C.C. pipes and 25% payment shall be released after satisfactory water tightness test of the laid pipeline, property connections, and commissioning of the complete zone is completed. The item shall be measured and paid for one running meter length of actual pipeline laid.

#### **2.32 Excavation**

##### **2.32.1 General**

The specifications contained in the standard specification volume IInd published by Public Works and Housing Department, Govt. of Maharashtra, Chapter Bd.A (1,A-2, A-3, A-4 & A-6 etc. on page No. 259 ) (Red Book) shall apply

The excavation shall be done to the required depth and section as per design drawing and as directed by Engineer-in-Charge. Extra depth shall be made up clear with concrete or other suitable materials as directed by Engineer-in-charge. At the cost of contractor. The excavated material shall be not be placed nearer than 300 m. from the edges of excavated portion. No. Compensation shall be admissible to the contractor due to any delay such as permission etc. After refilling of the trenches, the balanced stuff should be disposed off as directed. Refilling and disposal will be paid separately in relevant items if Schedule 'B'.

##### **2.32.2 Site Clearance**

The area to be excavated shall be cleared off. All trees and bushes and rubbish and other objectionable materials removed shall be burnt or disposed off as directed by the Engineer-in-Charge. The cost of such clearing shall be deemed to have been included in the rates accepted for different items under excavation.

During excavation, if masonry, concrete structure roots of trees etc are met with the same shall be removed without extra cost. The loss to public or private utility services such as telephone or electric cables/water mains or such other if comes across the trenches, shall have to be made good at the cost of the contractor. The permission for such crossing if required form the competent authority shall be obtained through Department. However



delay in obtaining such permission shall not be considered as cause of delay for the works and no compensation shall be admissible to the contractor due to such delay.

### **2.32.3 Dewatering**

No distinction shall be made as to whether the material being excavated is dry, moist or wet. The item also includes bailing out of water manually to keep the trenches reasonably dry for all further works of concerning, lowering ,laying & Jointing and testing of the pipe line till the completion of the work. Separate item of Dewatering by pumps is incorporated in the tender, if any ground water sources are met during excavation.

### **2.33 Shoring and Strutting**

The item includes all shoring and strutting that may be required. On no account the width of trenches more than those mentioned here in after shall be measured. If excavation width more than the specified is required for the purpose of keeping machinery, steeping due to loose material or for any other reasons the same shall be at the Contractors cost.

#### **2.33.1 Fencing, Lighting and Watching :-**

The contractors shall made all proper arrangement for protecting the work by means of fencing, watching, and lighting at night, as directed by the Engineer-in-charge. The post of fencing shall be of timber, securely fixed in the ground not more than 3m. apart, and they shall not be less than 75 mm in diameter or less than 1.2 m. above the surface of the ground. There shall be two rails, one near the top of the posts and the other about 450 mm above the surface of the ground and each shall be from 50 mm to 70 mm in diameter and sufficiently long to run form post to post, to which they shall be bound with strong rope. The method of projecting not be allowed on any account. All along the edges of the excavated trenches a bank of earth about 1.20 m high shall be formed where required by the Engineer-in-charge for further protection. Proper provision shall be made for lighting at night and watchman shall be kept to see that this is properly done. In the event of the contractors not fully complying with the provisions of these clauses. The Engineerin-charge may put up a fence or improve the fence already put up or provide or improve the lighting or adopt such measures as he may deem necessary without prior intimation to the contractor and all the cost of such procedure as may be adopted by the Engineer-in-charge, shall be borne by the contractor.

In addition to the normal lighting arrangements, the contractor shall be provide, wherever a sewer work is in progress, battery operated linking lights (6 Volts) in the beginning and end of a trench with a view to provide suitable indication to the vehicular traffic. The contractor shall also provide and display special boards painted with fluorescent paints indicating the progress of the work along a particular road.

The items of excavation are including necessary lighting at night at suitable intervals, but not more than 15 meter along the excavated trenches and at all crossing and barricading the same by fencing so as to avoid the accident. Chowkidars shall be employed at place where the trenches cross over any traffic road to caution the vehicles and pedestrians etc. The arrangements shall be maintained till completion of work and at the cost of the Contractor.

#### **2.33.2 Alignment and levels. :-**

Before the excavation of trench is commenced, sight rails shall be erected at every 30 m. and at all points of change of direction, gradient and at ends. The excavation work shall be

proceeded by a joint survey along with alignment of the main, to obtain ground level at every 30 m. or less distance. Temporary Bench Marks shall be constructed at every 300 m. distance along the alignment and shall be maintained till the completion of the work. All labour and materials for the survey work of fixing Bench Marks etc. shall be provided by the contractor at his own cost. Since the lines to be laid are drainage lines., the grade and level are very important factors. Those shall be maintained very carefully. For any mistakes in survey the Contractor is fully responsible. He should not lay the pipes, unless the alignment is thoroughly checked by the Engineer-in-Charge or his authorized representative who is empowered to sign the work order book in token of checking the exact grade and level of the trenches excavation.

Excavation at random places shall not be measured by the Engineer in-charge. Any non-technical practices during the excavation of the contracted work shall be viewed very seriously by the SCDCL and a note to that effect will be recorded against the Contractor in his name.

### **2.33.3 Depth and Grades of trenches :-**

The trenches shall be excavated to the required grades and depth as shown on approved drawings or as directed by the Engineer-in-charge. If not so, the payment for the item will not be paid to the Contractor. The depths of excavation and the level of the pipe inverts shall be checked by means of boning rods of suitable lengths. Additional depths if required to be excavated for pits for sockets, collars, specials, joints, and for any other working facility shall not be measured and paid separately. The minimum cover above the pipe shall be 0.90 m.

The bottom of trench shall be leveled both longitudinally and transversely or stepped as directed by Engineer-in-charge. The Contractor shall notify the Engineer when the trenches are ready for bedding so that the Engineer can inspect and record the depth. Only on explicit approval by Engineer, the bedding shall be provided by the Contractor. If any public utility i.e. electrical cable, telephone cable, water connections, sewer connections, gutter damage etc. then same will be rectified by contractor at his own cost.

ding or line drilling and shall comply with the specifications.

### **Mode of measurement and payment**

The excavation shall be measured in Cubic meters only. Dimensions shall be measured correct to two decimal of meter and quantity shall be calculated to two places of Decimal of Cubic meters. The item mentioned in Schedule-B in which includes disposing excess excavated material remained after refilling will not be paid separately for disposing excavated material.

### **2.33.4 Manufacture and Placement of concrete :-**

#### **a) Batching :-**

Whether controlled or ordinary concrete is to be mixed, the quantity of cement shall be determined by weight. If the mixers weight per bag is to be used, the same shall be verified by weighing a reasonable number of bags.

Whenever direct use of bagged cement is allowed, one bag of cement shall be considered to contain 50 kg of net weight of cement. This shall, however, be verified at site by weighing for which the contractor shall provide an accurate weighing apparatus on work sites

Having once decided the mix, the Engineer-in-charge may permit further mixing of the aggregate to be done on volumetric basis.

Wherever the concrete is to be laid in trenches, the trench shall be cleaned, watered and compacted before placing. The sub soil water which met shall be removed and the trench shall be kept dry during and after two hours of placing of concrete. For more depth of P.C.C. mechanical vibrator shall be used for compaction by the contractor.

The damages to concrete during laying of pipe line shall be rectified free of cost. The rate for the concrete includes all labour, material centering shuttering securing etc. all leads and lifts.

Mixing of concrete shall be done with concrete mixer.

For providing Electric wiring duct, tubes of the required diameter and length shall be provided through walls beams and floors, slabs as and when directed without any extra cost.

- a) The contractor will make his own arrangement for receiving all material tools etc. required for the work.
- b) No extra charges for the carriages of water will be allowed.
- c) The rates for all items are inclusive of all charges such as carting, lifting, etc. No extra payment for any lead and lifts will be paid for any item.
- d) The contractor should not be Sublette without written permission of the Engineer-in-Charge Cement cubes of size 15 cm x 15 cm x 15 cm shall be taken during the concreting of important structure like RCC wet well, sewage treatment plant, etc. to check the strength of the concrete and its acceptability. While taking cubes the requirements specified in the relevant Indian Standard specification shall be observed properly and cubes of required numbers shall be casted so as to ascertain the acceptability of the concrete. Similarly, proper care shall be taken for curing of the cubes the requirements specified in the ISS in respect of casting of concrete cubes and curing thereof, with acceptability criteria of concrete are reproduced below, which shall be following scrupulously.

**Frequency of sampling**(IS:456:2000 (Clause 15.2))

- a) Number of samples to be taken during concreting based on the quantum of concrete cast shall be as below.

Quantity of concrete in Cum No. of samples

01 to 05 1

06 to 15 2

16 to 30 3

31 to 50 4

50 and above 4 + 1 for every 50 Cum part thereof

At least one sample shall be taken from each shift of concrete and three test specimens (cubes of size (15 x 15 x 15 cm) shall be cast from each such sample for testing of the compressive strength additional three cubes will also have to be taken for 7 days test. Test strength of the sample shall be the average the strength of the three specimen.

**Acceptance criteria**(IS:456:2000 Clause 16)

The concrete cost shall be supposed to be acceptable in the compressive strength (i.e. average strength of the three specimen) of the samples fulfill the following requirements.

- a) Every sample has a test strength not less then characteristic value.  
OR
- b) The strength of one or more samples, though less the characteristic value is in each case, not less then the greater of following.

i) The characteristic strength minus 1.35 times the standard deviation. and

ii) 0.80 times the characteristics strength.

c) And the average strength of all the samples is not less than the characteristic strength plus

$$1.65 \quad * \quad \frac{1.65}{\text{No. of samples}} = \text{times the standard No. of samples deviation}$$

d) However, it should be noted that individual variation should not be more than the percent of average.

**Standard Deviation Values**

Grade of Concrete	Assumed Standard deviation in Kg/Cm <sup>2</sup>
M-100	35.00
M-200	46.00
M-250	53.00
M-300	80.00

**2.34 Curing of Concrete Cubes (IS:516:1959, CLAUSE 3.3)**

The test specimen (cubes) shall be stored on the site at place free from vibration, under damp matting, sacks or other similar material for 24 hours + ½ hour from the time of adding the water to the other ingredients. The temperature of the place of storage shall be within the range of 22o to 32oC. After the period of 24 hours, stored in clean water at temperature of 24o to 30oC until those are transported to the testing laboratory. Samples shall be sent to the testing laboratory well packed in damp sand, damp sacks or other suitable material as to arrive there in a damp condition, not less than 24 hours before the time of test.

On arrival at the testing laboratory, the specimen shall be stored in water at a temperature of  $27 \pm 2$  °C until the time of test. Record of the daily minimum and maximum temperature shall be kept, both during the period specimen remain on the site and in the laboratory.

#### **2.34.1 Test Procedure (IS:516:1959 CLAUSE 5.5)**

Specimen stored in water shall be tested immediately on removal from water and while those are still in the wet condition. Surface water and grit shall be wiped off the specimens and any projecting fins removed. Specimen, when received dry, shall be kept in water for 24 hours before taken for testing. The dimensions of the specimens to the nearest 0.2 mm and also weight shall be noted before testing.

#### **2.34.2 Other Things**

Here, it should be specifically noted that age of concrete cube will be age as on the date of testing i.e. time difference between addition of water to dry ingredient and actual testing.  
Refilling of Trenches

The item shall be done as per standard specification No. Bd-A-10, Page No.263 After lowering, laying, jointing and welding of pipe line, site guniting and concreting work, refilling of trenches with available excavated stuff shall be done For bedding only approved quality of excavated materials shall be used. Bedding shall be done before laying of pipe line to the desired grade as directed by Engineer-in-charge.

For refilling purpose, approved excavated stuff shall only be used. The refilling shall be done in layers of 15 to 20 cms. Each layers should be watered and compacted properly before the upper layer is laid till the required level is reached. First 2 layers of 15 to 20 cms shall be free from stones or chips or any harmful material, to protect the pipe from damage. Only soil or soft murum shall be used for filling. Originally filling shall be done 30 to 40 cms above natural ground or road level. Sinking below the road or ground level, if noticed till the completion of work, the contractor shall have to make it level at his cost.

#### **This item includes.**

- a) Clearing useful excavated material of rubbish bracking clods, stone, etc.
- b) Conveying the useful excavated material upto 500 M and filling in layers, watering and compacting.
- c) All labour, equipment and other arrangements necessary for the satisfactory completion and completion of the item.

After water tightness test etc. the trench shall be refilled in layers and shall be rammed manually. The filling shall be kept above ground level for subsequent settlement. In the case of trench in rock, cushioning from approved excavated materials shall be provided at sides and 0.30 m. on top of pipe line by manually to avoid the damages to the laid pipes. The item includes free lead of 50 meters for actual operation. After refilling of trenches, it shall be watered and compacted satisfactory by the roller as directed by Engineer-in-charge.

The contractor shall have to cart the selected excavated stuff from site of work to any other site for refilling as per requirements as directed. The payment shall be made to contractor under relevant item No.11 for disposal in Schedule 'B'

#### **Mode of Payment:-**

The payment of refilling shall be made to the contractor only after completion of water tightness satisfactory test etc. of the pipe line. The measurement of work shall be taken in cubic meter up two place of decimals. Mode of measurement and payment of the rate shall be for a unit of one per Cum of compacted trench filling with approved excavated material.

The measurement shall be net for the compacted filing and no deduction for shrinkage or voids shall be made. However, deduction for pipe volume will be made. Depth of filling for measurement will be limited from natural ground level only. No payment will be made for filling for 30 to 40 cms above natural ground level, if so insisted by the Engineer-in-charge.

Surplus excavated material will be the property of MC. So contractor is not empowered to sell this excavated material to any other agency.

This disposal will not be considered for initial 500 M lead from edge of pipe line trenches and so will not be paid for.

The material shall be conveyed by means of suitable devices/manner.

The material conveyed to the place of disposal shall either be stocked or spread as directed by Engineer-in-charge or his representative.

The route opening and maintenance, payment of any royalties, compensation to land owners and for damaged of any etc. during the process of conveyance etc. shall be the entire responsibility of the contractor.

### **2.35 Filling in plinth and floors/trenches with contractor's murum**

If required the approved quality of murum brought by contractor shall be allowed to use for bedding as per provision in BOQ item

#### **2.35.1 Contractor's responsibility for secure shoring and or all damages:-**

The contractors will be held responsible for providing secure shoring and for adopting every other precaution which may be necessary or proper for protecting and building which may be damaged or be liable to damage by the excavation of any trench or otherwise by the excavation of the works in the vicinity of such building. If the Engineer-in-charge shall require the adoption of any special or extra measures or precautions the contractors shall forth with adopt & supply the same but this proportion is not to be read or understood as in any degree of relieving the contractors from responsibility or from liability under relevant clause contract, in respect of claims made against the department by for loss or damage which may be caused to any such building by the excavation of any of the works or otherwise. After the work is completed near buildings, the contractors shall remove any shoring and make good any cutting out or other damage that may have been done..

#### **Mode of Payment :-**

The item shall be measured and paid for on square meter basis. The area shall be calculated by considering the length and height of open timbering and shoring provided for each side of trench separately. The timbering shall be paid to the extent of 85% only after its objective of protecting the excavation till the lowering, laying, jointing, testing of the sewer line is completed and the section is refilled. 15% payment shall be made after Successful commissioning of scheme.

**2.36 B.B. Masonry for circular Manhole and chamber**

Providing and constructing B.B. Masonry circular Manhole chamber.....etc. completed.

The item includes excavation in all types of strata for all lifts, P.C.C. for foundation in M-150 grade of various thickness B.B. Masonry in 1:3 proportion of various thickness ranging from 23 cm to 46 cm as per type design, R.C.C. slab in M-150 grade including cost of reinforcement, 20 mm thick cement plaster in two coats in C.M. 1:3 proportion from inside and outside, top C.C. coping in – 150 grade (1:2:4) providing and fixing C.I. Dapuri steps or P.V.C. coated of approved make steps at 0.30 m c/c, refilling, disposal of surplus excavated stuff up to 5 Kms. Lead including curing, testing etc. complete as directed.

Following specifications contained in standard specifications book (Red Book) shall apply.

i)	Excavation in all type of strata.	Bd-A-1 to A-6 on Page No. 259
ii)	P.C.C. 1:2:4 (M-50 grade)	Bd-E-1 Page No. 287
iii)	R.C.C. Work such as slab etc.	Bd-G-1 Page No. 313
iv)	R.C.C. work such as slab etc.	Bd-F-3,22,23 & 24 on Page No. 282,292 & 293.
v)	Reinforcement	Bd-F-17 Page No. 306
vi)	20mm thick cement plaster in C.M. 1:3	Bd-L-5 Page No. 368
vii)	Refilling.	Bd-A-10 Page No. 263

Slab shall be provided at intermediate stage as per type drawing. The intermediate slab is to be cast in situ. The reinforcement in this slab is expected to be around 1% of concrete volume and design of reinforcement shall be given by contractor and got approved by Executive Engineer. The frame and cover for the top slab (Manhole) should be of Steel Fibber Reinforced Concrete (S.F.R.C.) of Bharat, Pratibha and K.K. Technology. The brochure of S.F.R.C. frame and cover shall be submitted by the contractor and got approved from Engineer-in-charge. The frame and cover shall be branded with the letter 'A.M.C.'

Kiln burnt bricks for manhole of approved quality only be used and shall be got approved from Engineer-in-charge. The samples of bricks shall be tested as per I.S. for various test in Government Engineering College. The testing certificate shall be produced by the contractor at his own cost. No. extra payment shall be made to the contractor on account of testing including transportation of samples etc. All the materials such as cement, bricks, aggregate, frame and cover, steps etc. shall be brought at the site of work at the cost of contractor.

The detailed specification for materials such as cement, fine and coarse aggregate and others shall be referred as per specification of I. No. (3) as mentioned in this tender.

The manhole than they have been raised above the highest subsoil water level expected in the monsoon shall similarly tested for water tight as far the pipe lines.

The procedure for testing shall be as follows.

The mouths of all pipes entering the manhole shall be suitably plugged with bricks, wooden or any other types of plug. The manhole under test shall then be filled with water up to the

general subsoil water level and observe for and period of one hour. If the level does not drop by more than 50 mm in one hour, it shall be assumed that the manhole is watertight.

During the period of test, the outside trench shall be kept free from any accumulation of subsoil water. In case of a drop of more than 50 mm in water level, the contractor shall note the places from where the leakage's taking places and take step to stop the leakage's satisfactory.

All manholes shall be tested for water tightness in all conditions by adopting the procedure as mentioned above. The manholes shall be cleared of all debris etc. and shall be thoroughly cleaned. No utility services such as cable, pipe line etc. shall be allowed to remain inside the manhole. Care should be taken to shift the same outside the manhole with the cost of contractor.

The type design/drawing or various types, sizes and depth of manhole is attached herewith. In case of any discrepancy between the drawing and specification the decision of Engineer-in-charge shall be final and binding on the contractor. The rate given in Schedule 'B' is for particular depth. The Depth of chamber is the height of masonry as shown in the type design. For the purpose of measurement the top of bottom P.C.C. to the top of slab/cover as shown in the drawing shall be considered. During course of execution any manhole chamber/cover damaged due to whatever may be the reason shall be made good by the contractor at his own cost. This shall be applicable till scheme is commissioned. After execution if it is found that manhole chamber level is not matching with the road level that shall be matched by the contractor at his own cost.

Mode of payment:-

90% payment after completion of construction work and 10% after hydraulic testing of manhole.

#### **2.37 C.I. Pipe ventilator.**

The item is provided for escape and ventilation of the gasses formed in the system. This includes required excavation in any strata in all lift, providing, laying, erecting and jointing 100 mm dia C.I. soil vent pipe of length 6 m. providing P.C.C. 1:2:4 base at bed and block/of size cement concrete in M-150 size grade 0.45 x 0.45 x 2.00 m. height as shown in the drawing attached, 12 mm thick plaster in C.M. 1:3 proportion shall be provided to the concrete block. The item also includes providing and fixing wire gauge dome vent pipe. In case of any discrepancy in drawing and the specification, the decision of Engineer-in-charge shall be final and binding on the contractor. The location shall be given by the Engineer and the item shall be paid on number basis.

#### **2.38 Providing and making all necessary arrangement for property connection.**

The location of property connection shall be as per site condition and as per direction of Engineer-in-charge.

The joints of UPVC/DWC PE pipes shall be water tight. The chamber shall be cleaned from all debris etc. and shall be thoroughly cleaned. No utility services such as cables, pipe line etc. should be allowed to remain inside the chamber care should be taken to shift the same outside the chamber.



The water tightness test for UPVC/DWC PE pipe line and chamber shall be given by plugging the mouth of pipes entering the manhole with the help of bricks etc. during the testing, the outside trench shall be kept free from any accumulation. In case of a drop in water level. The contractor shall note the places from where the leakage's taking places and take step to stop the leakage satisfactory. No extra payment for excavation, refilling, disposing shall be allowed for drop arrangement work.

The UPVC/DWC PE Pipe shall be laid from property chamber to manhole, for whatever maybe the length of pipe. The location of property connection shall be as per the direction of Engineer-in-charge. Contractor shall not construct the chamber without permission from the Engineer-in-charge. It is expressly clarified here that it is assumed that 85 % of property connections will be for buildings which will be provided in UPVC pipes where as 15 % of property connections shall be for bungalows which will be provided in DWC pipes. This proportion may vary at the time of execution and contractor shall be paid on the actual quantity as per type of house hold connection provided.

All property chambers shall be tested for water tightness test. The frame and cover for property chamber should be of fiber reinforced concrete (FRC) or as specified in BOQ item. The testing certificate should be submitted by the contractor & got approved from Engineer in charge

### **2.39 Repairing the damaged cables of telephone, water supply pipe lines etc**

During the trench excavation for sewage collecting net work including cost of material required for repairs pipe, specials etc including excavation and refilling etc complete per km of completion of laying of sewer laterals and trunk mains .

#### **2.39.1 Damages to Services:-**

The work of excavation shall be proceeded very carefully by the contractor. Before actual excavation trial trenches shall be carefully taken by the contractor for assessing the services e.g. water mains, drainage lines, telephone and Electrical cables that are likely to be encountered in the excavation of pipe-line trenches. The trial trenches shall not be paid for separately. After assessing the alignment and level of other services, the contractor shall get approved the exact alignment from the Engineer and proceed with the work accordingly. Any damages to the private and Government properties shall be reinstated by the contractor .If any damages are caused or likely to be caused, The contractor shall remove the service connections from water mains and re-do them as directed by the Engineer-in-charge. This shall be done with least inconvenience to the connection holder and without any extra cost for any diameters

Item includes:-

All type of excavation for repairs of damages of telephone cables, electric lines, water mains up to 100 mm dia.

All type of materials pipes, specials jointing materials such as C.I.D. Joints, couplers rubber rings , rubber sheet nut bolts etc up to 100 mm dia.

If water mains of R.C.C./A.C./C.I./G.I./M.S./PVC/D.I. etc. of diameter more than 100 mm and above are encountered the contractor shall relay such lines to keep service continued as directed by the Engineer-in-charge, If in the opinion of the Engineer, it is possible to

obviate such mains, the contractor shall realign the pipe line in tender scope as directed by the Engineer-in-charge without any compensation for the excavation discarded by the SCDCL.

The pipe and special required for shifting/relaying of mains shall be supplied by the SCDCL free of cost for dia above 100 mm if available with the SCDCL. If such required materials are not available with the SCDCL, the special materials as directed by the Engineer-in-charge shall be procured by contractor and shall be payable to him. The payment of such materials shall be regulated at mutually decided rates based on reasonable markets rates or CSR prevailing at the time whichever is less. The contractor shall procure the materials without waiting for finalization of rates in order to meet the urgency. Proper account of the materials shall be kept by contractor.

All the labour and materials charges shall be payable to the contractor only when continuous length requiring shifting / relaying of mains of dia of above 100 mm exceed 5 m. The basis for such payment shall be the rates of respective works terms covered in Schedule 'B' of the tender for the items available in the tender or rates derived from tendered rates for similar items. In case of item not covered in Schedule 'B', the prevailing C.S.R. shall be applicable. For the relaying / shifting work involving dia above 100 mm in continuous length below 5 m. no labour and material charges (except pipes and specials) shall be payable. No any material or labour charges will be paid to the contractor which damages of pipe line below 100 mm.

#### **2.39.2 Mode of payment:-**

The item shall be measured and paid for on Running meter length basis or as provided in BOQ . The length shall be considering the actual length of sewer laterals / trunk main network completed and hydraulically tested by contractor. All the damages and repairs are carried out by contractor.

#### **2.39.3 Drop Arrangement**

Drop arrangement shall be provided 0.80 m. height in manholes for R.C.C. pipes sewer line. UPVC/DWC PE pipes property connections etc. of diameter various from 150 to 300 mm. It is necessary to avoid splashing of sewage on the man working in manhole. Through the manhole and the drop arrangements are separate item, the combined structure shall be homogeneous and bound to each other.

#### **2.40 Reinstating damaged house connection**

This item shall be executed as per the description given in the BOQ of relevant item and as directed by Engineer-in-charge.

**Item to include:** Excavation upto 2-3 m and providing and fixing UPVC/Gi pipe with necessary specials and jointing material and the water supply of same connection shall be resumed within a period of 24 hours.

**Mode of measurements:** The item of house connection for payment shall be recorded on No basis after completion of work

##### **2.40.1 Air vent**

The item pertaining for providing and fixing of air vent of 80 mm dia of C.I. pipe

S&s. the item includes making the hole to the chambers of required size. The pipe of 80 mm dia shall be fixed in the chamber at the upper most portion and jointing with accessories. Watertight jointing shall be done. The 80 mm dia CI pipe shall be fixed vertically 1.8 m high above the ground level with tight fixtures and care shall be taken so that no no hinderance to the traffic will be caused. The jointing of pipes and fixtures shall be CM1:2 prop and pipe shall be painted with atwo coats of anticorrosive paint. The pipe shall be fixed with concrete block of 30 x 30 x 30 cm size. The work shall be completed as per direction of engineer in charge.

**Mode of measurements:** The item of air vent for payment shall be recorded on Running meter basis after completion of work

## NOTES

- 1) Rate mentioned in schedule are inclusive of the following
  - a) Carting of materials including loading & unloading etc of the same to the site of the work & inclusive of all mining royalty no extra payment shall be made against royalty charges
  - b) Dewatering during entire construction & diversion of flow of water till the completion of work
  - c) All the taxes etc for providing the material by the contractor at site.
- 2) All the work shall be carried out as per red book of standard specifications latest edition & or as directed by the Engineer- in – charge
- 3) The work is inclusive of clearance of site prior to the commencement of the work & on its completion in all respects & shall hold good for all conditions of weather & approach road condition etc.
- 4) The quantities indicated are likely to vary on plus / minus side for which no extra claim shall be entertained subject to the provision of clause 38 of agreement form. Quantities exceeding over estimate quantities as per clause 38 will be paid after approval from the competent authority.
- 5) Water for construction & testing purposes will be arranged by the contractor at his own cost. MUNICIPAL CORPORATION will not supply or take any responsibility thereof.
- 6) Rates given in schedule 'B' for supply of all types of pipe specials & valves etc. are inclusive of transportation upto the site of work.
- 7) All the materials brought on site of work should conform to relevant I.S. specifications of latest edition. Cement & reinforcement supplied by the contractor shall be got tested from Govt. recognized institute / VNIT / Polytechnic etc. at the cost of contractor & should submit the test result before its uses. After confirmation of test results as per I.S. material will be allowed for use.
- 8) Payment: - Agency shall procure the material like pipes, specials valves etc by computing actual quantity required for the work. Payments for excess material procured by the agency will not be considered for payments.
- 9) A) In all cases of providing all types of pipes, valves, C.I. S/S specials, C.I. Mechanical joints & specials 60% payment will be released on receipt of material along with manufactures test certificate, & inspection certificate of Third Party.
- 10) 25% Payment will be released after lowering, laying & jointing is completed.
- 11) 15% Payment will be released on completion of satisfactory hydraulic testing & test certificate is recorded in measurement book.
- 12) 15% payment for successful hydraulic testing will be withheld & will be paid only after satisfactory hydraulic testing is given for items of lowering laying jointing & testing of pipes, specials & valves etc.

- 13) 5% amount of all R.C.C. item will be kept withheld for the receipt of satisfactory cube testing result from Govt. recognized Institution/VNIT/ Polytechnic etc.

**Schedule B: BOQ (Bill Of Quantities)**  
(attached separately)

**Appointment of Contractor for Procurement, Construction and Maintenance of Solapur Priority Roads Package of 09m, 12m, 15m, 18m, 24m wide with an approximate total length of 10.8 km road/ street/ footpath/junction/related utilities on Project Sites at Solapur City under Smart Cities Mission**

**Summary Sheet**

<b>SR. NO.</b>	<b>Description</b>	<b>Amount</b>
<b>1</b>	Road Civil work	317,923,422
<b>2</b>	Storm Water	121,568,157
<b>3</b>	Road Street furniture Base Estimate	23,689,589
<b>4</b>	Traffic Signal	10,754,833
<b>5</b>	Street Light	69,392,690
<b>6</b>	Hume Pipe and MSEDCL (OH to UG work)	118,967,164
<b>7</b>	<b>Total Amount</b>	<b>662,295,855</b>
<b>8</b>	<b>Total Amount in Crores</b>	<b>66.23</b>
<b>9</b>	Water Supply network	106,202,505
<b>10</b>	Sewerage Supply network	108,866,208
<b>11</b>	<b>Total Gross Amount</b>	<b>877,364,569</b>
	<b>Amount in Crores</b>	<b>87.73</b>

**Abstract**

<b>Bill of Quantities Civil Road Works</b>						
<b>Sr.No</b>	<b>Description</b>	<b>Unit</b>	<b>Total Qty</b>	<b>Rate</b>	<b>Amount</b>	<b>Ference</b>
<b>Section - A (Civil Road Works)</b>						
<b>A-I</b>	<b>Site Clearance</b>					
1	Cutting down trees including trunks and branches with girths above 30cm to 60cm and stacking the materials neatly with all lifts and lead of 1000m as directed and earth filling in the depression /pit if any. (Diposit to CE store / Garden Department / as directed by engineer incharge.) etc complete	No	40.00	348.00	13920.00	As per SSR 2017-18, Sr.no.78, item no.2.08, MORTH 201
2	Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately etc. complete.	Cum	13496.30	189.00	2550801.00	As per SSR 2017-18, Sr.No.126 , item no.3.10, MORTH 202
3	Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials upto lead of 50 metres, stacking serviceable and unserviceable materials separately etc. complete.	Cum	317.895	783.00	248912.00	As per SSR 2017-18, Sr.no.127, item no.3.11, MORTH 202
4	Providing & erecting Barricading of size 2000x1750 mm of structural steel work in rolled section of ISA 50x50x5 mm (4.5Kg/m) of vertical 2 angle of 1.750m. & horizontal 2 angle of 2.00 m length with MS sheet 2mm thk as per detailed designs etc Complete	Rmt	2000.00	1918.50	3837000.00	Rate Analysis
5	Dismantling & Re-erecting Barricading of size 2000x1750 mm of structural steel work in rolled section of ISA 50x50x5 mm (4.5Kg/m) of vertical 2 angle of 1.750m. & horizontal 2 angle of 2.00 m length with MS sheet as per detailed designs etc complete	Rmt	22083.00	34.00	750822.00	PMC DSR, 118078, 6-21
6	Dismantling brick masonry in lime or cement mortar and stacking the materials as directed with all leads, lifts, complete.	Cum	400.00	190.00	76000.00	As per SSR 2017-18, Sr.No. 1714, item no.46.09,
7	Removal of telephone / Electric poles including excavation and dismantling of foundation concrete and lines under the supervision of concerned department, disposal with all lifts and up to a lead of 1000 metres and stacking the serviceable and unserviceable material separately etc complete stacking to respective departments as directed by engineer incharge.	Nos.	30.00	210.00	6300.00	As per SSR 2017-18, Sr.No. 321, item no.7.25, MORTH 202
<b>Total Site Clearance Work =</b>					<b>7483755.00</b>	
<b>A-II</b>	<b>Earthwork</b>					
8	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	37080.37	71.00	2632707.00	As per SSR 2017-18, Sr.No.88, item no.2.11, MORTH 301



Sr.No	Description	Unit	Total Qty	Rate	Amount	Referrence
9	Excavation for roadway in soft rock, 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 or stacking as directed.	Cum	4635.14	113.00	523771.00	As per SSR 2017-18, Sr.no.91, item no.2.14, MORTH 301
10	Excavation for roadway in Hard rock by wedging and chiselling,or line drilling,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	4635.14	489.00	2266584.00	As per Maharashtra State DSR 2017-18, Sr No. 93 item no. 2.16, pg.no.13/330.
11	Transportation of excavated material to disposal area upto 10 Kms.	Cum	4635.00	156.00	723060.00	As per Maharashtra State DSR 2017-18,statement C-1
12	Transportation of excavated material to disposal area upto 5 Kms.	Cum	32445.00	99.00	3212055.00	As per Maharashtra State DSR 2017-18,statement C-1
13	Transportation of excavated material to disposal area upto 2 Kms.	Cum	9270.00	63.00	584010.00	As per Maharashtra State DSR 2017-18,statement C-1
14	Providing earth work in embankment with approved materials obtained from departmental land or other sources upto lead of 50m. including all lifts, laying in layers of 20cm. to 30cm. thickness breaking clods, dressing to the required lines, curves, grades & section, watering and compaction with vibratory roller with V-Sat attachment to achieve not less than 97 % of standard proctor density etc. complete.	Cum	100.00	674.00	67400.00	As per SSR 2017-18, Sr.No.105, item no.2.28, MORTH 305
15	Conveying materials obtained from road cutting including all lifts, laying in layers of 20cm to 30cm breaking clods, dressing to the required lines, curves, grades and section, watering and compacting to not less than 97% of standard proctor density for a Lead of 300m to 500m inclusive, from the site of excavation of deposition as directed. etc complete	Cum	940.00	226.00	212440.00	As per SSR 2017-18, Sr.No. 103, item no.2.26, MORTH 305

Sr.No	Description	Unit	Total Qty	Rate	Amount	Referrence
16	Providing , laying and spreading soil on aprepared sub grade, pulverizing,mixing the spread soil in place with rotavator with 3 percent slaked lime with minimum content of 70 percent of Cao, grading with motor grader and compacting with the road roller at OMC to achieve at least 98 percent of the max dry density to form a layer of subbase. etc complete	Cum	21067.20	761.00	16032139.00	As per SSR 2017-18,Sr.No.112, item no.2.35, MORTH 402
<b>Total Earthwork Cost =</b>					<b>26254166.00</b>	
<b>A-III</b>	<b>Granular Sub Base</b>					
17	Construction of granular sub-base by providing close graded Material, mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader/ Paver on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401 -- Plant Mix Method and Grading - I Material. etc complete	Cum	26525.00	1793.00	47559325.00	As per SSR 2017-18, Sr.No.117, item no.3.01,
18	Wet Mix Macadam -- Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density. Laying By Grader/ Paver. etc complete	Cum	7630.00	1799.00	13726370.00	As per SSR 2017-18, Sr.No.139, item no.3.23, MORTH 406
<b>Total for Granular Sub Base =</b>					<b>61285695.00</b>	
<b>A-IV</b>	<b>Bituminous Course</b>					
19	Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying, primer at the rate of 0.60 kg/sqm using mechanical means. etc complete- A) For Main Road	Sqm	32155.80	19.00	610960.00	As per SSR 2017-18, Sr.No. 145, item no.3.29, MORTH 502
	B) For Approach Road	Sqm	965.00	19.00	18335.00	
20	Providing and applying tack coat on the prepared surface heating by fumes in Boiler and spraying bitumen with sprayer on Dry/Hungry B.T. surface 3.0 kg/10 sqm.VG-30 bulk bitumen.	Sqm	59078.80	10.00	590788.00	As per SSR 2017-18,Sr.No. 147, item no.3.31, MORTH 503
	B) For Approach Road	Sqm	1772.00	10.00	17720.00	
21	Dense Bituminous macadam: Proving and laying dense bituminous macadam using crushed aggregates of grading 2 premixed with bituminous binder VG-30 Bitumen @ 4.50 per cent by weight of total mix and filler, transported to site with VTS , laid over a previously prepared surface, finished to the required grade, level, alignment, and rolling to achieve the desired density for 50/75mm compacted thickness using 80 TPH Batch mix type hot mix plant with SCADA, Sensor Paver, Intelligent Compactor with compaction analyzer and V-Sat attachment with Stone Dust filler. etc complete	Cum	1489.00	5536.00	8243104.00	As per SSR 2017-18, Sr.No. 161, item no.3.45, Morth 505
	B) For Approach Road	Cum	45.00	5536.00	249120.00	

Sr.No	Description	Unit	Total Qty	Rate	Amount	Referrence
22	Bituminous Concrete Providing and laying bituminous concrete using crushed aggregates of grading 2, premixed with bituminous binder @ 5.20 per cent by weight of total mix and filler, transported to site with VTS , laid over a previously prepared surface, finished to the required grade, level, alignment, and rolling to achieve the desired compaction for 30/40 mm compacted thickness with VG-30 Bitumen, Excluding prime / tack coat. For Bitumen VG-30 bulk -- USING 80 TPH Batch mix type hot mix plant with SCADA, Sensor Paver, Intelligent Compactor with compaction analyzer and V-Sat attachment with Stone Dust filler. etc complete	Cum	1190.00	5651.00	6724690.00	As per SSR 2017-18, Sr.No. 165, item no.3.49, Morth 507
	B) For Approach Road	Cum	36.00	5651.00	203436.00	
	<b>Total Bituminous Work =</b>				<b>16658153.00</b>	
<b>A-V</b>	<b>Cement Concrete Pavement</b>					
23	Construction of dry lean cement concrete Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25mm, cement content not to be less than 150kg/cum,optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant/ Weigh batch mixer, transported to site with all leads and lifts, laid with a paver with electronic sensor/ by suitable means as approved by Engineer-in-charge, compactingwith vibratory roller finishing, curing and including preparation of sub-grade surface if required etc. complete.	Cum	7057.00	2888.00	20380616.00	As per SSR 2017-18, Sr.no. 190, item no.5.13, MORTH 601
24	Providing and laying in-situ M40 Grade unreinforced plain cement concrete pavement with max 20% fly ash (Fly-ash upto 20% by weight of Cement) over a prepared sub base with 43 grade cement , coarse and fine aggregate conforming to IS 383, using fine & coarse aggregates combined gradation as per Table 600-3 of MORTH Specification 2013, mixed in a batching and mixing plant/ non tilting mixer and Weigh batcher as per approved mix design, admixtures, transporting to site, spreading, laying with approved make paver, compacting and finished in a continuous operation, finishing to lines and grades as directed by Engineerin-charge and curing by curing compound /by providing cement vata in cement Mortar 1:8 @0.6m X 0.6m centre to centre, admeasuring 80mm at bottom and 40mm at top with depth of 75mm and maintaining the same throughout curing period by any other method approved by Engineer-in-charge etc complete	Cum	16280.00	5176.00	84265280.00	As per SSR 2017-18, Sr.No. 186, item no.5.09, MORTH 601
25	Providing and fixing in position TMT FE 500, 32 mm dia dowel bars precoated with anticorrosive epoxy paint of required Dia. 60 cms. Long and at 30.00 cm. C/C & wherever directed including handling, straightening, necessary cutting supported by TMT FE500, chairs with proper alignment by using properly designed assembly of Bulkheads lubricating half length with bituminous paint as directed etc. complete.	Nos.	58802.00	332.00	19522264.00	As per SSR 2017-18, Sr.No. 191, item no.5.14, MORTH 602
26	Providing and fixing in position TMT FE500, tie bars precoated with anticorrosive epoxy paint of 12mm dia. 70cms long and at 30cm C/C & wherever directed including handling, straightening wrapping with paper of approved quality for half length, necessary cutting, handling, straightening, supported by assembly of TMT FE500, chairs with proper alignment etc. complete.	Nos.	19934.00	170.00	3388780.00	As per SSR 2017-18, Sr.No. 193, item no.5.16, MORTH 602

Sr.No	Description	Unit	Total Qty	Rate	Amount	Referrence
27	Cutting Transverse contraction joints 3 to 4 mm wide and depth 60mm in concrete slab using concrete cutting machine with diamond studded saw withing 48hours of casting of bay/ slab etc. complete including subsequent widening of the groove 8 to10 mm wide at top having depth of 15mm as directed by engineer-incharge. etc complete	Rmt	17640.00	60.00	1058400.00	As per SSR 2017-18, Sr.No. 194, item no.5.17, MORTH 602
28	Providing to contraction joints polysuphide sealent (Pouring grade) confirming to BS : 5212 - 1989 into sawed groove widened at top for sealent reservoir of specified size and shape as per detailed drawing including fixing Polyethylene foam backer rod of required diameter (approx. 25% larger than the initial 3mm to 4mm joint) overlaid with bond braking tape as per detailed drawing. Item includes cleaning the joints with water jet / air compressor & allowing joint to become thoroughly dry before sealent is applied and applying primer. (A) Contraction & longitudinal joints (15mm deep x 8 mm wide). etc complete	Rmt	17640.00	66.00	1164240.00	As per SSR 2017-18, Sr.No. 195, item no.5.18, MORTH 602
29	Providing and laying 125 micron Low Density Polyethylene ( LDPE) sheet confirming to IS 3395 : 1997 below concrete pavement including all materials and labour etc complete	Sqm	70562.00	19.00	1340678.00	As per SSR 2017-18, Sr.No. 196, item no.5.19, MORTH 605
<b>Total for Cement Concrete Pavement =</b>					<b>131120258.00</b>	
<b>A-VI</b>	<b>Miscellaneous</b>					
30	Planting of trees by the road side (Avenue trees) in 0.60 m dia holes, 1 m deep dug in the ground, providing and mixing the soil with decayed farm yard/sludge manure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants (Neem, Cordia Sebestena, Mimusops elengi, cassia fistula, lagerstromieia speciosa) for one year etc complete.	Nos.	120.00	1174.00	140880.00	Rate Analysis
31	Providing and fixing MS iron tree guard 60 cm dia and 2 metre high above ground level formed of 4 Nos (25 x 6 mm) and 8 Nos (25 x 3 mm) vertical MS riveted to 3 Nos (25 x 6 mm) iron rings in two halves, bolted together with 8 mm dia and 30 mm long bolts including painting two coats with paint of approved brand over a coat of priming, complete in all respects. etc complete as directed by engineer incharge	Nos.	120.00	2023.00	242760.00	Rate Analysis
32	Providing and Fixing heavy duty interlocking concrete RUBBER MOULD GLOSSY PAVING BLOCKS of 60mm thickness of having a strength of 400 Kg/sq.m of approved quality and shape on a bed of crushed sand of 25 to 30mm thick including striking joints and cleaning etc. complete (using 100% crushed sand).	Sqm	48765.00	739.00	36037335.00	As per SSR 2017-18, Sr.No. 1210, item no.33.53,
33	Providing and fixing heavy duty inter locking concrete Rubber mould glossy paving blocks of 80 mm thickness of having a strength of 400 kg/Sq.cm. of approved quality and shape on a bed of crushed sand of 25 to 30 mm thick including skirting joints and cleaning etc. complete. (using 100% crushed sand)	Sqm	577.00	1073.00	619121.00	As per SSR 2017-18, Sr.No. 1211, item no.33.54,
34	Providing selected hard murrum filling including laying in layers of 15 to 20cm with watering and compacting etc.complete.	Cum	8780.00	538.00	4723640.00	As per SSR 2017-18, Sr.No. 381, item no.11.24,
35	Construction of Median and Island with Soil Taken from Borrow Areas (Construction of median and Island above road level with approved material brought from borrow pits, spread, sloped and compacted as per clause 407) etc complete	Cum	2033.00	314.00	638362.00	As per SSR 2017-18, Sr.No. 324, item no.7.28,

Sr.No	Description	Unit	Total Qty	Rate	Amount	Referrence
36	Road Marking with Hot Applied Thermoplastic Compound with Reflectorisng Glass Beads on Bituminous Surface (Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorisng glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.) etc complete	Sqm	5000.00	520.00	2600000.00	As per SSR 2017-18, Sr.No. 234, item no.6.35, MORTH 803.4
37	Painting Line, Dashes, Arrows etc on Roads in two coats on new work with ready mixed road marking paint confirming to I.S.164 on Bituminous surface including cleaning the surface of all dirt, dust and other foreign matter, demarcation at site and traffic control (Over 10 cm wide) (MORTH-803)--NewSurface. etc complete	Sqm	400.00	152.00	60800.00	As per SSR 2017-18,Sr.No. 219, item no.7.01, MORTH 409
38	Providing and casting in situ or precast tapering R.C.C. M-20 Barrier type Kerb without gutter (as per IRC 86 1983) embedded 125mm below ground level over M-10 PCC finished neatly with C.M. 1:2, setting the same in C.M. 1:2, including the required excavation in any strata and removing the excavated stuff any where in city and redoing the surface as specified and directed by Engineering In-charge. Using Concrete Batching and Mixing Plant	Rmt	24846.80	365.00	9069082.00	As per SSR 2017-18,Sr.No. 297, item no.7.01, MORTH 409
39	Providing and laying Cast in situ / Ready Mix cement concrete M-30 of trap / granite /quartzite/ gneiss metal for R.C.C. work in foundations like raft, strip foundations, grillage and footings of R.C.C. columns and steel stanchions etc.columns as per detailed designs and drawing or as directed including centering, formwork, cover blocks laying/ pumping, compaction finishing the formed structures with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel) with fully automatic micro processor based PLC with SCADA enabled reversible drum type mixer/ concrete batch mix plant (Pan mixer) etc.complete With natural sand / V.S.I quality Artificial Sand. <b>(For Edge Beam and median kerb)</b>	Cum	1517.00	5817.00	8824389.00	As per SSR 2017-18, Sr.No. 861, item no.25.15
40	Providing and Casting in situ cement concrete in M20 of trap/granite/quartzite/gneiss metal for bed blocks, foundation blocks and such other items including biling out water, plywood/steel formwork, compacting, roughneing them if special finish is to be provided, finishing uneven and honeycombed surfaceand curing etc. complete. The cement mortar 1:3 plaster is considered for rendeirng uneven and honeycombed surfae only. Newly laid concrete shall be covered by gunny bag,plasticc, tarpaulin etc.(Wooden centering will not be allowed), with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer, with natural sand. <b>(Saucer Drain)</b>	Cum	1257.87	4756.00	5982425.00	As per SSR 2017-18, Sr.No. 837, item no.24.10,

Sr.No	Description	Unit	Total Qty	Rate	Amount	Referrence
41	Providing and fixing Mandatory/Regulatory sign boards in circular shape of 600 mm dia made out of 1.5mm aluminum sheet bonded with white retro reflective sheeting of Class B ( Type IV High intensity micro-prismatic grade sheeting-HIP) having pressure sensitive/heat activated adhesive retroreflective specified back ground, border and back side retroreflective symbols, letters, numerals, arrow as per IRC:67- 2012 Table No 8.3 Supported with back support frame 25mm x 25mm x 3mm, duly painted on back side with grey stove enamel paint and supported on one no. of M. S. angle iron post of size 65 mm X 65 mm X 6 mm, 3.45 m long, duly painted with with flat oil paint having alternate black and white bands of 25 cm width including G.I. fixtures etc; fixing the boards in M25 grade concrete block of size 60cm X 60cm X 75cm including transportation etc; complete. Class B ( Type IV High intensity micro-prismatic grade sheeting-HIP) shall have 7 years written warranty from the manufacturer and authorised distributor/convertor issued for field performance including the screen printed areas and cut-out sheeting and cut-out durable transparent overlay film and this warranty certificate in original should be submitted to the Engineer in charge by the contractor/supplier. etc complete as directed by engineer incharge	Nos.	60.00	3707.00	222420.00	As per SSR 2017-18, Sr.No. 246, item no.6.47, MORTH 801
42	Providing and fixing Cautionary/Warning sign boards in Equilateral Triangle size of 600mm made out of 1.5mm aluminum sheet bonded with white retro reflective sheeting of Class B (Type IV High intensity micro-prismatic grade sheeting HIP) having pressure sensitive/ heat activated adhesive retroreflective specified back ground, border and back side retroreflective symbols, letters, numerals, arrow as per IRC:67 2012 Table No.8.3 supported on one no. of M.S angle iron post size 65mm x 65mm x 6mm, 3.45 m long, duly painted with flat oil paint having alternate black and white bands of 25 cm width including G.I fixtures etc; fixing the boards in M25 grade concrete block of size 60cm x 60cm x 75 cm including transportation etc; complete. Class B (Type IV High intensity micro-prismatic grade sheeting-HIP) shall have 7 years written warranty from the manufacturer & authorised distributor/ convertor issued for field performance including the screen printed areas and cut-out sheeting and cut-out durable transparent overlay film and this warranty certificate in original should be submitted. to the Engineer in charge by the contractor/supplier. etc complete	Nos.	155.00	2672.00	414160.00	As per SSR 2017-18, Sr.No. 259, item no.6.60, MORTH 801
43	Stamped Concrete:- thin overlay approximately 1/32" to 5/16"(thicker application may be necessary in some situations) of stamped concrete overlays over M-20 concrete of 100mm thick-surface,interior,applied smooth, textured or stamped in various patterns and designs using stamps and seamless texture skins, then antiqued, chemically stained or integrally colored and sealed with the appropriate coating. Systems sealers or protective top coats of M-20 concrete of 100mm thickness & cement Content 325 kg/cum) etc complete	Sqm	357.00	1595.00	569415.00	As per PMC DSR 2017-18, 11802, 5-36 (excluding 18% GST)

Sr.No	Description	Unit	Total Qty	Rate	Amount	Reference
44	Supplying and fixing of Molded Shank Raised Pavement Marker / Cat's Eye made of polycarbonate and ABS 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 16000 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 11.06.1977. The height, width, length shall not exceed 50 mm, 100mm, 102 +/- 2 mm and with minimum reflective area of 13 Sqcm on each side and slope to the base shall be 35+/- 5 degrees. The strength of detachment of the integrated cylindrical shanks of diameter not less than 19 +/- 2 mm and height not less than 30 +/- 2 mm from the body is to be minimum value of 500 kg. Fixing will be by drilling holes on the road for the shanks to go inside without nails and using epoxy resin based adhesive as per manufacturers recommendation and complete as directed by the engineer. The contractor shall submit a two year warranty for satisfactory field performance including stipulated retro-reflectance of the reflecting panel, to the Engineer.	Nos.	1898.00	420.00	797160.00	As per SSR 2017-18, Sr.No. 223, item no.6.28, MORTH 804
45	Providing and fixing of retro- reflectorised informatory sign board rectangular/Square in shape having area greater than 0.9 square meter made out of 2mm aluminum sheet bonded with white retro reflective sheeting of Class B ( Type IV High intensity micro-prismatic grade sheeting-HIP) having pressure sensitive/heat activated adhesive retroreflective specified back ground, border and back side retroreflective symbols, letters, numerals, arrow as per IRC:67-2012 Table No 8.3, supported with back support frame 25mm x 25mm x 3mm, duly painted on back side with two coats of grey stove enamel paint & supported on two no. mild steel angle iron post 75 mm x 75 mm x 6 mm, 3.5 mt long firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing The angle iron post shall be duly painted with one coat of epoxy primer and two coats of epoxy finish paints having alternate black and white bands of 25 cm width including GI fixtures and transportation etc.complete.The nut bolts of board with angle iron post/supporting structure after fixing at site has to be electrically welded. Class B ( Type IV High intensity micro-prismatic grade	Sqm	70.00	8285.00	579950.00	As per SSR 2017-18, Sr.No. 287, item no.6.88, MORTH 801

Sr.No	Description	Unit	Total Qty	Rate	Amount	Referrence
46	Providing and erecting Overhead signs made out of 2mm aluminum sheet bonded with white retro reflective sheeting of Class C ( Type XI Micro prismatic grade sheeting) having pressure sensitive/heat activated adhesive retroreflective specified back ground, border and back side retroreflective symbols, letters, numerals, arrow as per IRC:67-2012, with designed back support frame of mild steel angle with vertical and lateral clearance given in clause 801 & 802, duly painted on back side with two coats of grey stove enamel paint and installed as per clause 802.6 over designed support system of structural steel work trestles and trusses of sections and type as per structural design requirements and approved plans including painting with one coat of epoxy primer and two coats of epoxy finish paint. The nut bolts of board with angle iron post/supporting structure after fixing at site has to be electrically welded. Class C ( Type XI Micro prismatic grade sheeting) sheeting shall have 10 years written warranty from the manufacturer & authorised distributor/convertor issued for field performance including the screen printed areas and cut-out sheeting and cut-out durable transparent overlay film and this warranty certificate in original should be submitted to the Engineer in charge by the contractor/supplier. This item does not include the cost of structural steel work required for support system	Sqm	342.00	7798.00	2666916.00	As per SSR 2017-18, Sr.No. 292 item no.6.93, MORTH 801
47	Provision of Speed Breaker with bituminous concrete, 100mm high at center, 3.7m wide placed at approved locations to control speed. - Bituminous Concrete Providing and laying bituminous concrete using crushed aggregates of grading 2, premixed with bituminous binder @ 5.20 per cent by weight of total mix and filler, transported to site with VTS, laid over a previously prepared surface, finished to the required grade, level, alignment, and rolling to achieve the desired compaction for 30/40 mm compacted thickness with VG-30 Bitumen, Excluding prime / tack coat. For Bitumen VG-30 bulk -- USING 80 TPH Batch mix type hot mix plant with SCADA, Sensor Paver, Intelligent Compactor with compaction analyzer and V-Sat attachment with Stone Dust filler.	Cum	120.00	5651.00	678120.00	As per SSR 2017-18, Sr.No. 165, item no.3.49, Morth 507
48	Providing structural steel work in single stanchions composed of R.S.J. Channel etc. with caps, bases, mild steel plated, angle brackets, cleats, gusset plates, anchor bolts etc. as per detailed designs and drawings or as directed including cutting, fabrication, hoisting, erecting fixing in position, making riveted/ bolted/ welded connection and one coat of anticorrosive paint and over it two coats of oil painting approved quality and shade etc. complete. (For Culvert crossing support for services)	M.t.	5.00	50892.00	254460.00	As per SSR 2017-18, Sr.No. 818, item no.23.03
	<b>Total for Miscellaneous Work =</b>				<b>74980515.00</b>	
<b>A-I</b>	<b>Total Site Clerance Work =</b>				7483755.00	
<b>A-II</b>	<b>Total Earthwork Cost =</b>				26254166.00	
<b>A-III</b>	<b>Total for Granular Sub Base =</b>				61285695.00	
<b>A-IV</b>	<b>Total Bituminous Work =</b>				16658153.00	
<b>A-V</b>	<b>Total for Cement Concrete Pavement =</b>				131120258.00	
<b>A-VI</b>	<b>Total for Miscellaneous Work =</b>				74980515.00	
	<b>Total for Road Works in Rs.</b>				<b>317782542.00</b>	



Sr.No	Description	Unit	Total Qty	Rate	Amount	Referrence
<b>Section - B (Storm Water Drainage Works )</b>						
1	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	12966.00	71.00	920586.00	As per SSR 2017-18, Sr.No.88, item no.2.11, MORTH 301
2	Excavation for roadway in hard 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	7203.25	67.00	482618.00	As per SSR 2017-18, Sr.No. 90, item no.2.13, MORTH 301
3	Excavation for roadway in soft rock, 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 or stacking as directed.	Cum	5763.00	113.00	651219.00	As per SSR 2017-18, Sr.no.91, item no.2.14, MORTH 301
4	Excavation for roadway in Hard rock by wedging and chiselling, or line drilling, 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	2881.30	489.00	1408956.00	As per SSR 2017-18, Sr.No. 93, item no.2.16, MORTH 301
5	Dewatering on BHP basis by using water pump including diversion of stream, providing cofferdams, earthen bunds etc.as may be necessary for foundation and other parts of the works and pumping out water during and after excavation as may be required by using 10.0 to 19.0 BHP pump etc. complete. (prior approval of Superintending Engineer will be necessary).	Hrs.	800.00	160.00	128000.00	As per SSR 2017-18, Sr.No. 407, item no.12.24,
6	Providing soling using 80mm size trap metal in 15cm layer including filling voids with Crushed sand/grit, ramming, watering etc. complete.	Cum	962.50	734.00	706475.00	As per SSR 2017-18, Sr.No. 752, item no.21.40
7	Providing and casting in situ / ready mix PCC M15 grade of trap metal for coping to head walls / parapet including centering, form work, compaction and curing etc. complete. (with reversible drum type mixer/ concrete batch mix plant (pan mixer) with SCADA with Natural/ VSI standard Artificial Sand).	Cum	1925.00	5637.00	10851225.00	As per SSR 2017-18, Sr.No. 386, item no.11.30,
8	Providing and laying cement concrete pipe of IS 458:2003 NP3 class of <b>600mm</b> diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc.complete.	Rmt	4540.00	3686.00	16734440.00	As per SSR 2017-18, Sr.No. 372, item no.11.14,
9	Providing and laying cement concrete pipe of IS 458:2003 NP3 class of <b>800mm</b> diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc.complete.	Rmt	6905.00	5879.00	40594495.00	As per SSR 2017-18, Sr.No. 373, item no.11.15,
10	Providing and laying cement concrete pipe of IS 458:2003 NP3 class of <b>900mm</b> diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc.complete.	Rmt	2465.00	6479.00	15970735.00	As per SSR 2017-18, Sr.No. 374, item no.11.16,
11	Providing and laying cement concrete pipe of IS 458:2003 NP3 class of <b>1000mm</b> diameter in proper line, level and slope including providing and fixing collars in cement mortar 1:2 and curing etc.complete.	Rmt	2900.00	7188.00	20845200.00	As per SSR 2017-18, Sr.No. 375, item no.11.17,

Sr.No	Description	Unit	Total Qty	Rate	Amount	Referrence
12	Providing and laying Cast in situ / Ready Mix cement concrete M-30 of trap / granite / quartzite/ gneiss metal for R.C.C. work in foundations like raft, strip foundations, grillage and footings of R.C.C. columns and steel stanchions etc.columns as per detailed designs and drawing or as directed including centering, formwork, cover blocks laying/ pumping, compaction finishing the formed structures with cement mortar 1:3 of sufficient minimum thickness to give a smooth and even surface or roughening if special finish is to be provided and curing etc. complete.(Excluding reinforcement and structural steel) with fully automatic micro processor based PLC with SCADA enabled reversible drum type mixer/ concrete batch mix plant (Pan mixer) etc.complete With natural sand / V.S.I quality Artificial Sand.	Cum	737.40	5817.00	4289456.00	As per SSR 2017-18, Sr.No. 861, item no.25.15
13	Providing and fixing in position TMT - FE -500 bar reinforcement of various diameters for R.C.C. pile caps, footings, foundations, slabs, beams columns, canopies, staircase, newels, chajjas, lintels pardis, copings, fins, arches etc. as per detailed designs, drawings and schedules. including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required complete.	MT	73.00	48624.00	3549552.00	As per SSR 2017-18, Sr.No. 958, item no.26.33,
14	Supplying & fixing composite Resin Manhole Strom water drain gully gratings cover & frame load bearing capacity (C-250) 25 MT (Inspection shall be as per guidelines of EN 124:2004 Required replacement warranty for 24 months if installation is correct. As directed by Engineer In charge Marking Required. Manufacturing Guidelines EN-124 Load Bearing capacity C-250 Name or id Mark of Manufacturer Year of Manufacturing 900 mm X 600 mm	Nos.	49.00	12600.00	617400.00	PMC Roads DSR 118067, 6-18-2
15	Supplying & fixing composite Resin Manhole Strom water drain gully gratings cover & frame load bearing capacity (C-250) 25 MT (Inspection shall be as per guidelines of EN 124:2004 Required replacement warranty for 24 months if installation is correct. As directed by Engineer In charge Marking Required. Manufacturing Guidelines EN-124 Load Bearing capacity C-250 Name or id Mark of Manufacturer Year of Manufacturing 900 mm X 900 mm	Nos.	202.00	18900.00	3817800.00	PMC Roads DSR 118068, 6-18-3
<b>Total for Storm Water Drainage Work =</b>					<b>121568157.00</b>	

<b>Section - C (Furniture Base Works )</b>						
C-I	Foundations & PCC for Placemaking Site Items					
1	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.	Cu.m	2974.75	71.00	211207.00	As per SSR 2017-18,Sr.No.88, item no.2.11, MORTH 301
2	Disposing of the excavated stuff ,soil,other material to the lead of 5 k.m.	Cu.m	2974.75	99.00	294500.00	As per Maharashtra State DSR 2017-18,statement C-1
3	Dismantling of Existing Busstop	No.	10.00	10000.00	100000.00	-

Sr.No	Description	Unit	Total Qty	Rate	Amount	Referrence
4	Providing and casting in situ / ready mix PCC M15 grade of trap metal for coping to head walls / parapet including centering, form work, compaction and curing etc. complete. (with reversible drum type mixer/ concrete batch mix plant (pan mixer) with SCADA with Natural/ VSI standard Artificial Sand).	Cu.m	2974.75	5637.00	16768666.00	As per SSR 2017-18, Sr.No. 386, item no.11.30,
5	Providing and laying Cast in situ/Ready Mix cement concrete M-25 of trap / granite /quartzite/ gneiss metal for R.C.C. work in foundations like raft, strip foundations, grillage and footings of R.C.C. columns and steel stanchions etc. including bailing out water, formwork ,cover blocks, laying/pumping, compaction and curing roughening the surface if special finish is to be provided (Excluding reinforcement and structural steel) etc. complete, with fully automatic micro processor based PLC with SCADA enabled reversible Drum Type mixer/ concrete Batch mix plant (Pan mixer) etc. complete. With natural sand/V.S.I. quality Artificial Sand	Cu.m	134.841	5644.22	761072.00	As per SSR 2017-18, Sr.No. 372, item no.11.14,
6	Providing and fixing in position TMT - FE - 500 bar reinforcement of various diameters for R.C.C. pile caps, footings, foundations, slabs, beams columns, canopies, staircase, newels, chajjas, lintels pardis, copings, fins, arches etc. as per detailed designs, drawings and schedules. including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required complete.	M.T	11.461	48566.56	556621.00	As per SSR 2017-18, Sr.No. 859, item no.25.13, BDF 3
7	Providing structural steel work in single stanchions composed of R.S.J. Channel etc. with caps, bases, mild steel plated, angle brackets, cleats, gusset plates, anchor bolts etc. as per detailed designs and drawings or as directed including cutting, fabrication, hoisting, erecting fixing in position, making riveted/ bolted/ welded connection and one coat of anticorrosive paint and over it two. coats of oil painting approved quality and shade etc. complete.	M.T	13.030	50892.00	663123.00	As per SSR 2017-18, Sr.No. 818, item no.23.03
8	<b>Concrete Bollards;</b> Provision of bollards at minor junctions, plot entry points & pedestrian crossing with a min spacing of 1.2m c/c or as directed by Engineer In-charge. Providing and fixing of Concrete Bollards of M-30 grade and size 950 mm (ht) x 150mm (dia), purchased from SMC's approved vendor, manufactured of reinforced concrete by vibro compaction method using FRP/ steel moulds as per the direction of Engineer in charge, complete incl. all consumables , T&P and Labours required for the job.	Nos	2064.00	2100.00	4334400.00	-
<b>Total For Section - Section - C (Furniture Base Works )=</b>					<b>23689589.00</b>	

Sr.No	Description	Unit	Total Qty	Rate	Amount	Referrence
<b>Section - D (traffic signal &amp; pedestrian signals Works)</b>						
<b>D-I</b>	<b>Traffic Signal &amp; Pedestrian Signals</b>					
1	Supply of ATC controller (16 groups) with controller cabinet. Provide red lamp monitoring, ATC (outstation modem) interface with optical fibre cables, Cable-less Linking facility etc. Controller shall support Adaptive Traffic Management of the intersection.	Nos	3.00	620724.00	1862172.00	
2	Supply of advanced 32 bit microprocessor GPS based RF-WIRELESS automatic traffic signal controller housed in M.S. SWG fabrication wether proof, vandrel proof, dust and splash proof M.steel 16 gauge cabinetepassivated and painted with appropriate colour, separate access for police control incorporating for special features 16 signal groups and capable to directly communicate with higher form of traffic control systems such as coordinated with adjacent controller with interface to INTERNET via GPRS for REMOTE MONITORING & CONTROL through web interface .	Nos	10.00	55500.00	555000.00	
3	Installation,testing and commissioning of all types of ATC controller	Nos	3.00	15158.00	45474.00	
4	Sealing of controller with bitumen / foam for achieving IP 55 protection.	Nos	3.00	5674.00	17022.00	
5	Construction of signal controller foundation upto 600mm height above ground level and 600 mm below ground level on C.C. M20 grade pedestal, having size (LXBXH) with fixing of SS304 nut bolts for controller cabinet & Power supply box cabinet as per MCGM technical specification and drawing no. RT-14.30 etc. complete	Nos	3.00	5980.32	17941.00	
6	Supply of audible beeper unit with all require accessories	Nos	44.00	2369.00	104236.00	
7	Installation and commissioning of audible beeper unit.	Nos	44.00	300.00	13200.00	
8	Supply, Installation and commissioning of Push button assembly including display / instruction board as per drawing	Nos	44.00	9586.00	421784.00	
9	Supply of Galvanised Iron Class B Traffic Signal straight pole of 6 mtr height as per Specification	Nos	32.00	11449.00	366368.00	
10	Supply of Galvanised Iron Class B Traffic Signal cantilever pole of as per Specification	Nos	15.00	32372.00	485580.00	
11	Supply of Galvanised Iron Class B straight pole of 11 mtr height as per Specification	Nos	0.00	31661.00	0.00	
12	Erecting straight pole in pole foundation of concrete M20 grade circular in shape of depth 1.3m below and/ or above ground level having dia. Of 300mm only	Nos	32.00	6270.00	200640.00	
13	Erecting cantilever pole in pole foundation of concrete M20 grade circular in shape of depth 1.3m below and/ or above ground level having dia. Of 450mm only	Nos	15.00	9797.00	146955.00	
14	Supply of power supply box 600mm X 400mm X 300mm (HXWXD), with canopy made in welded construction of S.S. 304 material having sheet of thickness 1.6mm with IP 65 protection as per technical specification and as per requirement of power supply authority	Nos	13.00	10770.00	140010.00	
15	Installation & commissioning of power supply box	Nos	13.00	1838.00	23894.00	
16	Supply of 300 mm dia single source LED retrofit - Red	Nos	76.00	6198.00	471048.00	
17	Supply of 300 mm dia single source LED retrofit - Amber (blow) as per Specification	Nos	76.00	6198.00	471048.00	
18	Supply of 300 mm dia single source LED retrofit - Green (arrow/ U- Turn) EN-12368 as per Specification	Nos	148.00	7378.00	1091944.00	
19	Supply of 300 mm dia single source LED retrofit - Red (ped. standing) EN-12368 as per Specification	Nos	44.00	6198.00	272712.00	
20	Supply of 300 mm dia single source LED retrofit - Green (ped.walking) EN-12368 as per Specificatio	Nos	44.00	7378.00	324632.00	
21	Supply of Polycarbonate LED Signal head housing 300 mm dia. as per ATC technical specification and drawing alongwith brackets & accessories etc. (For all type of LED Retrofit)	Nos	388.00	3187.00	1236556.00	
22	Installation of Polycarbonate LED Signal aspect of 300 mm dia. on standard traffic signal straight pole	Nos	313.00	312.00	97656.00	

Sr.No	Description	Unit	Total Qty	Rate	Amount	Ference
23	Installation of Polycarbonate LED Signal aspect of 300 mm dia. On standard traffic signal cantilever pole	Nos	75.00	624.00	46800.00	
24	4TI - 16 outputs (Ref. No 19-6027)	Nos	9.00	30129.00	271161.00	
25	Adaptive Traffic Management Software with License for 10 junctions (to be connected to existing atcs software in command & control room of solapur smart city )					
26	Supply, Installation, Testing, Commissioning of COUNT DOWN TIMER ( CDT) on traffic signal pole of digit size 8" & should show various TRAFFIC RELATED SLOGAN messages in ENGLISH & MARATHI during the RED signal waiting period.	Nos	12.00	12000.00	144000.00	
27	Supply of low maintenance tubler battery EXIDE or equivalent make with necessary connectors, links terminals etc. as per IS 1651:1991					
	12Volts DC 66 AH	Nos	94.00	14500.00	1363000.00	
28	Supply of photovoltaic solar panels of					
	13 Volts 70 Watt	Nos	94.00	6000.00	564000.00	
	<b>Total For Section - D (traffic signal &amp; pedestrian signals Works ) =</b>				<b>10754833.00</b>	

STREET LIGHTING ELECTRICAL ESTIMATE FOR SMART CITY PROJECT - PRIORITY ROADS PROJECT, SOLAPUR						
Sr.	Description Of Item	Reference	Quantity	Unit	Rate	Amount
	<b>SUMMARY</b>					<b>6,93,92,690.46</b>
<b>A</b>	<b>PANELS &amp; DISTRIBUTION BOARDS TOTAL RS....</b>					8,19,010.60
<b>B</b>	<b>CABLES &amp; CABLE END TERMINATIONS TOTAL RS...</b>					51,11,147.80
<b>C</b>	<b>EARTHING TOTAL RS.</b>					11,37,726.00
<b>D</b>	<b>LIGHTING FIXTURE TOTAL RS...</b>					2,11,88,623.00
<b>E</b>	<b>DISMENTALING TOTAL RS....</b>					2,50,668.60
<b>F</b>	<b>HUME PIPE PROVISION FOR CABLE LAYING TOTAL RS....</b>					3,94,60,155.66
<b>G</b>	<b>Misc. TOTAL RS_.</b>					14,25,358.80
<b>A</b>	<b>PANELS &amp; DISTRIBUTION BOARDS</b>					
1	Supplying and erecting Outdoor Stand Mounted Distribution & Street Light control Panel for with 4 outgoing. 14 guage CRCA sheet box with supporting angles, self lock, gasket and slanting top erected on CC foundation in an approved manner. Incomer R, Y, B Indication Lamp, 40A FP RCBO, 300mA, 24 Hrs. Timmer, Auto manual selector switch 40A FP Contactor (2NO+2NC), Four No. of Aluminum Busbar 100A , 3 Phase Meter (MSEDCL Scope), Illumination start stop push button, 6A, TP MCB, 10ka, C Curve, Power terminals Outgoing 16A, TP MCB1 10KA, C Curve - 4 Nos., Power Termianals Note:- Size of Panel- 700mm (L) x 700mm (W) x 400mm (D) In timmer provision of alternate on/off combination		11	Each	37,169.00	4,08,859.00
2	Supplying and erecting Outdoor Stand Mounted Distribution & Street Light control Panel with 6 outgoing. 14 guage CRCA sheet box with supporting angles, self lock, gasket and slanting top erected on CC foundation in an approved manner. Incomer R, Y, B Indication Lamp, 40A FP RCBO, 300mA, 24 Hrs. Timmer, Auto manual selector switch, 40A FP Contactor (2NO+2NC), Four No. of Aluminum Busbar 100A , 3 Phase Meter (MSEDCL Scope), Illumination start stop push button, 6A, TP MCB, 10ka, C Curve, Power terminals Outgoing 16A, TP MCB1 10KA, C Curve - 6 Nos., Power Termianals Note:- Size of Panel- 700mm (L) x 700mm (W) x 400mm (Depth)		6	Each	40,288.60	2,41,731.60
3	Supplying and erecting Outdoor Stand Mounted Feeder Pillar for highmast of the same manufacturer with 32A TPN MCB incomer, single dial timer switch, 25 A TP contactor for automatic switching of luminaries, 2 no 9A contactors and raise/lower push button, and provision for termination of Incoming minimum 35 sq. mm and outgoing minimum 16 & 2.5 sq. mm cables complete erected in min. 14 guage CRCA sheet box with supporting angles, self lock, gasket and slanting top erected on CC foundation in an approved manner.	8-3-32	7	Job	24,060.00	1,68,420.00
	<b>PANELS &amp; DISTRIBUTION BOARDS TOTAL RS....</b>					<b>8,19,010.60</b>
<b>B</b>	<b>CABLES &amp; CABLE END TERMINATIONS</b>					
1	Supplying, erecting & terminating PVC armoured cable 3½ core 25 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL	7-1-17	405	m	194.00	78,570.00
2	Supplying, erecting & terminating PVC armoured cable 4 core 16 sq mm aluminium conductor with continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL	7-1-16	14783	m	170.00	25,13,031.80
3	Supplying & erecting mains with 3x2.5 Sq.mm F.R copper PVC insulated wire laid in provided conduit/trunking/inside pole/Bus bars or any other places as per specification No: WG-MA/BW	1-3-13	5330	m	71.00	3,78,430.00
4	Supplying and laying (including excavation) 50 mm outside dia. double wall corrugated pipes (DWC) of HDPE for enclosing cable below ground/road surface, to required depth complete.	7-6-11	11574	m	185.00	21,41,116.00
	<b>CABLES &amp; CABLE END TERMINATIONS TOTAL RS...</b>					<b>51,11,147.80</b>
<b>C</b>	<b>EARTHING</b>					
1	Providing earthing with Galvanized cast iron earth plate size 60 x 60 x 0.6 cm with funnel with a wire mesh for watering and brick masonry block C.I. covercomplete with all materials, testing & recording the results as per specification No. EA-EP	9-1-3	48	Each	4,981.00	2,39,088.00
2	Supplying and erecting GI strip of required size used for earthing on wall and/or any other purpose with necessary GI clamps fixed on wall painted with bituminous paint in an approved manner with joints required. As per specification No EA-EP	9-2-3	48	Kg	178.00	8,544.00
3	Providing pipe type earthing with 40mm. dia. G.I. pipe or 20 mm dia. G.I. Rod complete with all materials as per specification No. EA-EP	9-1-4	654	Each	1,218.00	7,96,572.00
4	Supplying and erecting <b>G. I. Earth Wire</b> of high purity of different sizes used for earthing or any other purposes on wall with necessary G. I. Clamps fixed on wall/cable/ conduit with screws in an approved manner.	9-2-5	654	kg	143.00	93,522.00

<b>EARTHING TOTAL RS.</b>						<b>11,37,726.00</b>
<b>D LIGHTING FIXTURE</b>						
1	Supplying and erecting LED street light fitting suitable for above 70W- 75 lamp, including lamp, with PF > 0.95 class IP 65 and above Housing of pressure die cast alluminium alloy and heat sink extruded alluminium complete per specification No FG-ODF/FLS2	2-9-6	790	Each	5,841.00	46,14,390.00
2	Supplying and erecting LED Flood light fitting of 90-100W, including lamp, with PF > 0.95, class IP 65 and above Housing of pressure die cast alluminium alloy and heat sink extruded alluminium complete per specification No FGODF/FLS-2	2-9-15	42	Each	9,459.00	3,97,278.00
3	Providing & erecting 7 m high (clear height) galvanised OCTAGONAL pole with foundation boltshaving bottom of 130 mm A/F, top 70 mm A/F on provided foundation as per specification No.OH-PL/OPL.	8-3-14	303	Each	14,186.00	42,98,358.00
4	Providing & erecting 9 m high (clear height) galvanised OCTAGONAL pole with foundation bolts having bottom of 155 mm A/F, top 70 mm A/F on provided foundation as per specification No.OH-PL/OPL.	8-3-16	351	Each	18,170.00	63,77,670.00
5	Supplying and erecting 12.5 m (clear height) High Mast (Top-150mm, Bottom 360mm) with lowering and raising motorized unit, lantern carriage assembly suitable for max. 6 nos. luminaries and its control gear box, lightning finial, arrangement for fixing aviation light and foundation bolts on provided foundation as per specification No. OH-PL/HM (excluding luminaries and CG Boxes.)	8-3-1	7	Set	1,93,809.00	13,56,663.00
6	Providing and erecting Galvanised 600mm single arm sword type bracket with FRP dome and ball as per specification No. OH-PL/PBKT	8-3-30	407	Each	2,154.00	8,76,678.00
7	Providing and erecting Galvanised 600mm double arm sword type bracket with FRP dome and ball as per specification No. OH-PL/PBKT	8-3-31	383	Each	3,535.00	13,53,905.00
9	Providing cement concrete foundation including excavation for the poles 60 cm x 60 cm x 1.5 m deep in 1:3:6 cement concrete (20 x 25 mm stone metal) and 45 cm x 45 cm x 45 cm /45 cm dia. x 45 cm height plinth duly plastered and with necessary curing and finishing in an approved manner.	16-3-2	654	Each	2,548.00	16,66,392.00
10	Providing & casting M- 20 cement concrete foundation suitable for 12.5 m raising lowering high mast considering the safe soil bearing capacity at site as 10 T/sq m at 2 m depth including excavation and fixing provided nut bolts with the help of template as per design in an approved manner.	16-3-11	7	Each	35,327.00	2,47,289.00
<b>LIGHTING FIXTURE TOTAL RS...</b>						<b>2,11,88,623.00</b>
<b>E DISMENTALING</b>						
All the dismanted material handed over to SCDCL/SMC Store						
1	Dismantling the existing pole up to 6 m height with brackets, clamps, insulators, stay from the cement concrete foundation and making the site clear by refilling the pits with excavated materials and bringing it to the ground level.	8-8-1	237	Each	416.00	98,592.00
2	Dismantling the existing pole above 6 m height with brackets, clamps, insulators, stay from the cement concrete foundation and making the site clear by refilling the pits with excavated materials and bringing it to the ground level.	8-8-2	33	Each	678.00	22,441.80
3	Dismantling the existing W.T. fluorescent fitting/ S.V./ M.V. / M.H. lamp /LED fitting from pole with brackets complete.	2-14-3	331	Each	89.00	29,459.00
4	Dismantling the existing cables of all types & size upto 10 sq mm.	7-12-2	4977	m	12.00	59,724.00
5	Dismantling the existing cables of all types & size above 10 sq mm upto 50	7-12-3	695	m	18.00	12,511.80
6	Dismantling the existing switchgears, DB, and Bus bar of any size complete with/ without board or angle iron frame	5-12-1	20	Each	76.00	1,520.00
7	Dismantling any type of unservicable feeder pillar, Switch gear panel, Capacitor Panel, Metering panel, Bus-bar Panel, Electronic Equipment Panel, etc. and remaking the site good as original. Approx. size (upto 150 cm x 70 cm x 45 cm ) - Small Coupboard	5-12-4	10	Each	1,057.00	10,570.00
8	Dismantling any type of unservicable feeder pillar, Switch gear panel, Capacitor Panel, Metering panel, Bus-bar Panel, Electronic Equipment Panel, etc. and remaking the site good as original. Approx. size ( upto 200cm. x 90 cm x 45 cm and above) - Big Coupboard	5-12-5	10	Each	1,585.00	15,850.00
<b>DISMENTALING TOTAL RS....</b>						<b>2,50,668.60</b>
<b>F HUME PIPE PROVISION FOR CABLE LAYING LV &amp; OFC</b>						
1	<b>For OFC (1 x Both Side of Road)</b> Providing and laying concrete pipes of I.S.NP. class of 225mm diameter in proper line, level and slope including necessary collars, excavation, laying, fixing with collars in cement mortar 1:1 and refilling the trench complete	SSR 42.08/BDV 41/Sr.no.15 61	22609	Mtr	563.85	1,27,48,014.17
2	<b>For LV (BSNL) (1 x Both Side of Road)</b> Providing and laying concrete pipes of I.S.NP. class of 150mm diameter in proper line, level and slope including necessary collars, excavation, laying, fixing with collars in cement mortar 1:1 and refilling the trench complete	SSR 42.07/BDV4 1, Page No. 573	22609	Mtr	514.50	1,16,32,266.19

3	Chamber with Precasted RCC Covers Providing and constructing B>B masonry chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in CM 1:5 proportion RCC frame and cover, etc, complete as directed by Engineer-in charge. Note:- wall thickness 0.23 m for depth of 1.2 m and 0.35 m for balance depth exceeding 1.2 m. As above of 1.2 x 1.2m internal size and depth up to 1.8 M with precaste R.C.C. slab Cover At 40 m Interval (Both Side of Road)	MJP DSR Section-L 1.F	486	No.	18,948.30	92,08,873.80
4	Chamber with Precasted RCC Covers Providing and constructing B>B masonry chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in CM 1:5 proportion RCC frame and cover, etc, complete as directed by Engineer-in charge. Note:- wall thickness 0.23 m for depth of 1.2 m and 0.35 m for balance depth exceeding 1.2 m. As above of 90 x 60 cm internal size and depth up to 1.8 M with precaste R.C.C. slab Cover At 40 m Interval (Both Side of Road)	MJP DSR Section-L 1.C	486	No.	12,080.25	58,71,001.50
<b>HUME PIPE PROVISION FOR CABLE LAYING TOTAL RS....</b>						<b>3,94,60,155.66</b>
<b>G</b>	Miscellaneous		1	LS	14,25,358.80	<b>14,25,358.80</b>



HUME PIPE & MSEDCL ELECTRICAL ESTIMATE FOR SMART CITY PROJECT - PRIORITY ROADS PROJECT, SOLAPUR						
Sr.	Description Of Item	Reference	Quantity	Unit	Rate	Amount
<b>SUMMARY</b>						<b>11,89,67,163.79</b>
<b>A</b>	<b>HUME PIPE PROVISION FOR CABLE LAYING TOTAL RS....</b>					3,74,96,655.00
<b>B</b>	<b>DISMENTALING</b>					17,95,600.00
<b>C</b>	<b>MSEDCL Material Charges</b>					6,92,82,529.38
<b>D</b>	<b>MSEDCL Labour &amp; Supervision Charges TOTAL RS....</b>					1,03,92,379.41
<b>A</b>	<b>HUME PIPE PROVISION FOR ELECTRICAL (MSEDCL)</b>					
1	<b>For HT (1 x Single Side of Road)</b> Providing and laying concrete pipes of I.S.NP. class of 300mm diameter in proper line, level and slope including necessary collars, excavation, laying, fixing with collars in cement mortar 1:1 and refilling the trench complete	SSR 42.09/BDV41/S r. no. 1563	13200	Mtr	811.65	1,07,13,780.00
2	<b>For LT (2 x Both Side of Road)</b> Providing and laying concrete pipes of I.S.NP. class of 225mm diameter in proper line, level and slope including necessary collars, excavation, laying, fixing with collars in cement mortar 1:1 and refilling the trench complete	SSR 42.08/BDV 41/Sr.no.1561	47500	Mtr	563.85	2,67,82,875.00
<b>HUME PIPE PROVISION FOR CABLE LAYING TOTAL RS....</b>						<b>3,74,96,655.00</b>
<b>B</b>	<b>DISMENTALING</b>					
1	Removing of RJS HT/LT Pole	MSEDCL	580	Nos.	300.00	1,74,000.00
2	Dismantling the existing overhead HT/LT line including G.I. wires of all sizes without damaging& making the coils in suitable sizes.	MSEDCL	810	Span	2,000.00	16,20,000.00
3	Removal of existing 200KVA Dist. Transformer	MSEDCL	2	No.	800.00	1,600.00
<b>DISMENTALING TOTAL RS....</b>						<b>17,95,600.00</b>
<b>C</b>	<b>MSEDCL Material Charges</b>					
<b>I</b>	<b>HT Feedar Pillar</b>					
1	11 Kv Feedar Pillar 2 Way	MSEDCL	29	No.	32,000.00	9,28,000.00
2	11 Kv Feedar Pillar 4 Way	MSEDCL	30	No.	80,900.00	24,27,000.00
<b>II</b>	<b>RMU</b>					
1	11 kV SF6, Motorized, SCADA Compatible RMU 3 ISO + 0 Br. With foundation and Earthing (Type 2)	MSEDCL	8	No.	3,86,930.66	30,95,445.28
2	11 kV SF6, Motorized, SCADA Compatible RMU 1 ISO + 2 Br. With foundation and Earthing (Type 2)	MSEDCL	1	No.	4,80,000.00	4,80,000.00
3	11 kV SF6, Motorized, SCADA Compatible RMU 4 ISO + 0 Br. With foundation and Earthing (Type 2)	MSEDCL	5	No.	5,05,032.00	25,25,160.00
4	11 kV SF6, Motorized, SCADA Compatible RMU 3 ISO + 1 Br. With foundation and Earthing (Type 2)	MSEDCL	2	No.	4,80,000.00	9,60,000.00
<b>III</b>	<b>HT CABLES &amp; CABLE END TERMINATIONS</b>					
1	Supplying , erecting & terminating 3 x 300 sq mm 11 kV, XLPE(E) armoured cable on wall/ceiling or laid in provided trench / pipe in an approved manner as per specification No. CB-HT	MSEDCL	19041	m	1,130.43	2,15,24,517.63
2	Supplying , erecting & terminating 3 x 95 sq mm 11 kV, XLPE(E) armoured cable on wall/ceiling or laid in provided trench / pipe in an approved manner as per specification No. CB-HT	MSEDCL	4334	m	636.67	27,59,327.78
3	Providing and erecting Heat shrinkable outdoor termination joint kit for 11 kV ( E ) XLPE HT cable 3x240 to 300 sq. mm. with necessary material as per specification No. CB-JT/HT	MSEDCL	180	Each	2,029.48	3,65,306.40
4	Providing and erecting Heat shrinkable out door termination joint kit for 11 kV ( E ) XLPE HT cable 3x70 to 95 sq mm with necessary material as per specification No. CB-JT/HT	MSEDCL	93	Each	1,458.10	1,35,603.30
5	Providing and erecting Heat shrinkable indoor termination joint kit for 11 kV ( E ) XLPE HT cable 3x240 to 300 sq. mm. with necessary material as per specification No. CB-JT/HT	MSEDCL	62	Each	1,661.61	1,03,019.82
6	Providing and erecting Heat shrinkable indoor termination joint kit for 22 kV ( E ) XLPE HT cable 3x70 to 95 sq. mm. with necessary material as per specification No. CB-JT/HT	MSEDCL	31	Each	1,168.49	36,223.19
7	Providing and erecting Heat shrinkable Straight through joint kit for 11 kV ( E ) XLPE HT cable 3x240 to 400 sq. mm. with necessary material as per specification No. CBJT/HT	MSEDCL	14	Each	5,288.96	74,045.44
<b>IV</b>	<b>HT EARTHING</b>					
1	Earthing Sets HT	MSEDCL	73	Set	335.51	24,492.23
2	Earthing with GI Pipe	MSEDCL	71	No.	268.81	19,085.51
3	Earthing with GI Plate	MSEDCL	71	No.	1,570.04	1,11,472.84
<b>V</b>	<b>LT Feedar Pillar</b>					
1	LT 4 Way Feeder Pillar with HRC Base	MSEDCL	29	No.	22,000.00	6,38,000.00
2	LT Feeder Pillar 2/3 Way	MSEDCL	167	No.	14,950.00	24,96,650.00
3	LT 6 Way Feeder Pillar with HRC Base	MSEDCL	41	No.	28,750.00	11,78,750.00
4	6 Way Feeder Pillar with ACB	MSEDCL	41	No.	61,500.00	25,21,500.00
4	LT 8 Way Feeder Pillar	MSEDCL	17	No.	36,500.00	6,20,500.00
5	LT Bus Bar (Junction Box) for Service Conn.	MSEDCL	96	No.	300.00	28,800.00
6	8/9 Service Pillar	MSEDCL	57	No.	4,000.00	2,28,000.00
7	LT Mini Feeder Pillar	MSEDCL	56	No.	8,400.00	4,71,240.00
8	LT Dist. Box 200 Kva with MCCB	MSEDCL	1	No.	24,661.00	24,661.00
<b>VI</b>	<b>LT CABLES &amp; CABLE END TERMINATIONS</b>					
1	LT XLPE Cable 3.5 Core 240 Sq.mm	MSEDCL	198	m	558.30	1,10,543.40
2	LT XLPE Cable 3.5 Core 185 Sq.mm	MSEDCL	25993	m	424.97	1,10,46,245.21
3	LT XLPE Cable 3.5 Core 120 Sq.mm	MSEDCL	6281	m	286.71	18,00,825.51
4	LT XLPE Cable 3.5 Core 70 Sq.mm	MSEDCL	1705	m	170.70	2,91,043.50
5	LT PVC arm. Cable 3.5C 35 Sq.mm	MSEDCL	1595	m	110.78	1,76,694.10
6	LT PVC arm. Cable 4C 16 Sq.mm	MSEDCL	10186	m	75.89	7,73,015.54
7	LT PVC Arm. Cable 2C 16 Sq.mm	MSEDCL	7821	m	50.49	3,94,882.29
8	LT PVC Arm. Cable 2C 4 Sq.mm	MSEDCL	42526	m	82.80	35,21,152.80

9	LT PVC Arm. Cable 2C 2.5 Sq.mm	MSEDCL	9922	m	75.01	7,44,249.22
<b>VI</b>	<b>LT EARTHING</b>					-
1	LT Earthing Set	MSEDCL	267	Set	162.57	43,406.19
2	GI Strip for Feeder Pillar Earthing	MSEDCL	284	Kg	64.78	18,397.52
<b>VIII</b>	<b>Provision for Temporary</b>					
1	Supplying and laying (including excavation) 200 mm outside dia, double wall corrugated pipes (DWC) of HDPE for enclosing cable below ground/road surface, to required depth complete	7-6-18	2000	m	560.00	11,20,000.00
2	Supplying and laying (including excavation) 146 mm outside dia. double wall corrugated pipes (DWC) of HDPE for enclosing cable below ground/road surface, to required depth complete.	7-6-15	2000	m	369.00	7,38,000.00
3	Shifting of existing pole mounted Distribution Transformer safely without any damages and erection it in suitable place. Shifting of Transformer (Dismantling of Transformer from DP Structure and Re-installation on New DP Structure)		400	KVA	724.20	2,89,680.00
4	Shifting the existing underground cable without damaging it with glands, cable end box including refilling the trench up to ground level and making coils complete. (Dismantling of underground cable & re installation through Hume Pipe)		1100	m	155.00	1,70,500.00
5	Supplying and erecting G.I. fly stay set for pole including straining screw, G.I. stay wire, 7/10 SWG (for to 15mtr. long) with pole clamp, made of 50 x 6 mm MS flat, complete erected on provided RSJ pole. (Add. Rs. 25/- per m for extra length beyond 15 m)	8-7-3	47	Each	1,753.00	82,391.00
6	Supplying & erecting single pole cut point channel set of for 11 kV HTOH line, two channel of size 100 x 50 mm 1.6 m long having stud angle of size 50 x 50 x 6 mm 1.5 m long with top piece of size 100 x 50 mm 0.45 m long with necessary clamps, nut bolts etc. complete as	8-4-17	47	Each	4,051.00	1,90,397.00
<b>IX</b>	<b>Transformer And Pole</b>					
1	Dist. Transformer 315 KVA 11/0.43 Kv	MSEDCL	1	No	4,45,000.00	4,45,000.00
2	Dist. Transformer 200 KVA 11/0.43 Kv	MSEDCL	1	No	1,86,000.00	1,86,000.00
3	RSJ 125x70, 8m Long	MSEDCL	66	No	4,591.00	3,03,006.00
4	RSJ 100 x 116 mm - 11 mtr	MSEDCL	5	No	11,089.00	55,445.00
5	Concreting (1:4:8) for Plinth & DP Structure	MSEDCL	121	Cmt.	2,596.08	3,14,125.68
<b>X</b>	<b>Survey</b>	MSEDCL	17	LS	1,000.00	17,000.00
<b>XI</b>	<b>Misc.</b>	MSEDCL	21	LS	24,153.00	5,07,213.00
<b>XII</b>	<b>FRTU &amp; Intergation with existing SCADA &amp; IT Infrastructure</b>					-
1	Mini Pole mounted FRTU base equipment along with enclosure suitable to work in open environmet (adequate from water & dust), rack, sub-racks, power supply modules with power backup, I/O modules, CPU, interacing equipment, required converters & all other required items/accessories including complete wiring for all modules.	MSEDCL	16	Set	58,459.00	9,35,344.00
2	Multi Function Transducer (MFTs)	MSEDCL	6	Nos	2,932.00	17,592.00
	HDRs	MSEDCL	197	Nos	308.00	60,676.00
	Modems (D-Link)	MSEDCL	16	Nos	2,300.00	36,800.00
	(Feeder Remote Terminal Unit) FRTU Cabinets Field	MSEDCL	0	LS	50,000.00	-
	Network connectivity charges for CDMA/GPRS/4G required for FRTUs	MSEDCL	16	Nos	2,309.00	36,944.00
	Genwral Packet Radio service (GPRS)	MSEDCL	16	Nos	6,552.00	1,04,832.00
	48V DC Power supply (DCPS) system based on SMPS	MSEDCL	16	Nos	45,519.00	7,28,304.00
	Cost to integrated Entire SCADA and IT infrastructure	MSEDCL	1	LS	1,50,000.00	1,50,000.00
	Mandatory spares for FRTU (5%)	MSEDCL	1	LS	96,024.00	96,024.00
	<b>MSEDCL Material Charges TOTAL RS....</b>					<b>6,92,82,529.38</b>
<b>D</b>	<b>MSEDCL Labour &amp; Supervision Charges</b>					
1	Labour Charges (C) * 15%	MSEDCL				1,03,92,379.41
2	Supervision Charges (A+B+C) * 1.3%	MSEDCL				
	<b>MSEDCL Labour &amp; Supervision Charges TOTAL RS....</b>					<b>1,03,92,379.41</b>
	<b>Note:-</b>					

Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city							
Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
1	<b>Providing and supplying at site of work DI Pipes</b> (push on joints pressure pipes of DI of following class and Dia meters confirming to the indian Standard specification inclusive cost of jointing materials (Rubber gasket of EPDM Quality)excluding GST levied by GOI and GOM in all respect including Thid party inspection charges of TPI Agency approved by the MJP including transit insurance,Railway frieght,unloading from railway wagon,loading in to the truck transportation to departmental store, unloading,stacking etc. completed as directed by engineer-in-charge(IS:1536:2001 for pipes and IS:158:1969 and 15:12820:1989 or latest edition/revision with amendments for rubber gaskets).(IS:8329:2000 latest version).						
	<b>MJP 18-19,Page No.86, item no. 3</b>						
	<b>D.I. K-9</b>						
i)	100mm	Rmt	11,036	793.00			<b>8751785.90</b>
ii)	150mm	Rmt	4,727	1151.00			<b>5440431.70</b>
iii)	200mm	Rmt	1,593	1565.00			<b>2492732.00</b>
iv)	250mm	Rmt	933	2081.00			<b>1941156.80</b>
v)	300mm	Rmt	2,850	2576.00			<b>7341857.60</b>
vi)	350mm	Rmt	64	3268.00			<b>208498.40</b>
vii)	400mm	Rmt	70	3810.00			<b>268224.00</b>
viii)	450mm	Rmt	437	4640.00			<b>2026288.00</b>
ix)	500mm	Rmt	781	5314.00			<b>4150234.00</b>
x)	600mm	Rmt	617	7081.00			<b>4369685.10</b>

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
2	Providing and supplying at site of work double flange sluice valve confirming for IS-14846 including worn gear arrangements as per test pressure, stainless steel spindle, caps, including inspection charges, transportation up to store, transit insurance, loading unloading, stacking excluding GST levied by GOI & GOM in all respect etc. complete.						
	<b>MJP 18-19,Page No.234, item no. (2a)</b>						
	<b>Sluice Valves PN - 1 (Without bypass arrangement)</b>						
i)	100mm	No.	30.00	5807.00			<b>174210.00</b>
ii)	150mm	No.	10.00	8709.00			<b>87090.00</b>
iii)	200mm	No.	1.00	15786.00			<b>15786.00</b>
iv)	250mm	No.	3.00	24407.00			<b>73221.00</b>
vii)	300mm	No.	6.00	30986.00			<b>185916.00</b>
vi)	350mm	No.	1.00	45583.00			<b>45583.00</b>
vii)	500mm	No.	2.00	92991.00			<b>185982.00</b>
	<b>For Bulk flow meter and PRV</b>						
i)	100mm	No.	9.00	5807.00			<b>52263.00</b>
iii)	150mm	No.	6.00	8709.00			<b>52254.00</b>
v	250mm	No.	2.00	24407.00			<b>48814.00</b>
vi)	300mm	No.	17.00	30986.00			<b>526762.00</b>
vii)	350mm	No.	2.00	45583.00			<b>91166.00</b>
x)	500mm	No.	5.00	92991.00			<b>464955.00</b>
xii)	600mm	No.	4.00	137770.00			<b>551080.00</b>

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
3	Providing and supplying kinetic double orifice type air valves confirming to IS 14845 as per MJP's standard specifications having small orifice elastic ball resting on a gun metal orifice nipple, large orifice vulcanite ball seating on moulded seat ring, with built-in kinetic features, isolating sluice valve mounted in horizontal position and operated by wheel gearing, inlet face and drilled, including insurance, third party inspection charges, loading, unloading, transportation upto departmental stores, excluding GST levied by GOI and GOM in all respect etc. complete.						
	<b>MJP 18-19,Page No.246, item no. 9</b>						
	b) Kinetic Air valve flanged, Type PN - 1.6 200mm	No.	1.00	30341.00			<b>30341.00</b>
	<b>Pressure Loggers</b>						
4	Providing, supplying, of pressure loggers at location suggested by Engineer-in-charge in all respect and as per specification given in tender. (Vendor supply item)	No.	24.00	<b>55000.00</b>			<b>1320000</b>
	<b>Residual chlorine analyser</b>						
5	Design, installation, testing of residual chlorine analyser/metal must have automatic sensor cleaning facility at our water sump and interfacing with PLC panel. Residual chlorine meter shall comprises of 3 components i.e. sensors, flow through assembly and transmitter with indicator and gives 2 outputs one to Local display and other to PLC including Mounting arrangement.	No.	13.00	<b>191451.00</b>			<b>2488863</b>
	Overall Range : 0 - 8mg/l (ppm)						

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
	Accuracy : 2% of full scale						
	Supply voltage : 230 V ac						
	Outout : 4 20 mA						
	Membrane free sensor of 2 gold plated electrodes for long term stability and reference electrode (ag/Agcl) must be provided to avoid maintenance.						
	IP 65 Nema 4 housing protection class required.						
	<b>MJP ELEC/MECH,Page No.104, item no. 5.5</b>						
6	Providing and supplying at site of work C.I./D.I./M.S. specials suitable for above said pipes including cost of all labour and materials and tranportation to store/site, loading, unloading and stacking, all taxes , etc complete.						<b>11097268.05</b>
	<b>a) CI mechanical joints / fittings - as per MJP, Item no. 1-9, page no. 260-269</b>	No.					
	<b>b) DI specials and fittings - as per MJP, Item no. 10 a) and 10 b) , page no.92</b>	Kg					
	<b>c) MS specials of required thickness as per Item no. 7 a) to 7 f), page no.89, 90</b>	Kg					
	<b>Battery Operated electromagnetic flow meter</b>						
7	Providing, erecting, testing and commissioning of battery operated electromagnetic flow meter built in GSM (with Simcard charges for 36 months validity) of various diameters as per the following specifications including 36 months guarantee etc complete.						
	<b>MJP ELEC/MECH,Page No.93, item no. WM4</b>						
i)	100 mm line size	No.	3	115122			<b>345366</b>
ii)	150 mm line size	No.	2	123503			<b>247006</b>
8	<b>Pressure Reducing Valve</b>						

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
	Designing, supplying installing commissioning & testing of Flow Control valve / Pressure reducing valve / Altitude valve for inlet / outlet with flow controlling, pressure controlling & monitoring on web and to the pipeline feeding to ESR/ MBR / GSR with cable, PLC etc. complete.						
	<b>MJP ELEC/MECH,Page No.106, item no. SA8</b>						
	100 mm dia	No.	3	126717			380151
	200 mm dia	No.	8	206052			1648416
	250 mm dia	No.	1	274691			274691
	400 mm dia	No.	2	536270			1072540
	500 mm dia	No.	1	749656			749656
9	<b>Mechanical Type Meters.</b>						
	A) Domestic Meters						
	Multijet meters						
	Providing, installing and giving satisfactory field testing of						
	Domestic water meter, horizontal inferential multijet type						
	with magnetic drive and dry dial suitable for ambient 50° C						
	Temperature duly sealed against tampering complete with						
	couplings at both ends and conforming to class B as per						
	ISO 4064 along with manufacturer's test certificate and						
	guarantee certificate, including cost of all materials and						
	labour etc with OIML , MID certification for Abroad and						
	FCRI for India including 36 months guarantee etc complete						

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
	<b>(MJP Elec/Mech CSR 2018-19, section 19, WM 1 b, Page no. 74)</b>						
	15mm	No.	450	1755			789750
	20mm	No.	200	2137			427400
	25mm	No.	100	3619			361900
10	Ultrasonic Water Meter						
A)	AMR Domestic Meters						
	Providing, installing and giving satisfactory field testing of domestic battery operated AMR water meters with no measurement of air along with manufacturing test certificate and guarantee certificate with battery life of minimum 10 years with GSM / RF technology for communication to server with PC software including 36 months guarantee, etc. complete.						
	<b>(MJP Elec/Mech CSR 2018-19, section 19, WM 2m A, Page no. 77 and 78)</b>						
	15mm	No.	450	7984			3592800
	20mm	No.	200	8708			1741600
	25mm	No.	100	10154			1015400
<b>Total for Material Section</b>							<b>67129123.55</b>
<b>LABOUR SECTION</b>							
11	<b>Excavation for Water supply work</b>						
	<b>D.I.Pipes -K9</b>						



**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
i	Excavation for foundation / pipe trenches in earth, <b>soils of all types, sand, gravel and soft murum</b> , including removing the excavated material upto a distance of 50 metres and lifts as below, stacking and spreading as directed, normal dewatering, preparing the bed for foundation and <b>excluding backfilling</b> , etc. complete. <b>(Lift upto 1.50 m)</b>	Cum	7338.61	145.00	7.25	152.25	<b>1117304.02</b>
	<b>MJP 18-19,Page No.47, item no. 1</b>						
ii	Excavation for foundation/pipes trenches in <b>hard murum</b> including removing the excavated material upto a distance of 50m and lifts as below, stacking and spreading as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete <b>(Lift upto 1.50 m)</b>	Cum	2446.20	165.00	8.25	173.25	<b>423804.97</b>
	<b>MJP 18-19,Page No.47, item no. 2</b>						
iii	Excavation for foundation / pipe trenches in hard murum and boulders, W.B.M. road including removing the excavated material upto a distance of 50 M beyond the area and lifts as below, stacking and spreading as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.	Cum	7338.61	185.00	9.25	194.25	<b>1425525.82</b>
	<b>MJP 18-19,Page No.47, item no. 3</b>						

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
iv	Excavation for foundation / pipe trenches in <b>soft rock and old cement and lime masonry foundation asphalt road</b> including removing the excavated material with 50m lead and lifts as below, stacking as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete. <b>Lift 0 to 1.5m</b>	Cum	10091.64	454.00	22.70	476.70	<b>4810685.74</b>
	<b>MJP 18-19,Page No.47, item no. 5</b>						
v	Excavation for foundation / pipe trenches in <b>hard rock and concrete road by chiselling, wedging, line drilling, by mechanical means</b> or by all means other than blasting including trimming and levelling the bed, removing the excavated material upto a distance of 50 metres beyond the area and lifts as below, stacking as directed by Engineer-in-charge, normal dewatering, excluding backfilling, etc. complete by all means. <b>Lift 1.50 m to 3.0 m</b>	Cum	2446.20	791.00	39.55	830.55	<b>2031695.36</b>
	<b>MJP 18-19,Page No.48, item no. 7</b>						
12	Making cross connection to existing distribution main of any type including excavation, breaking and removing existing pipes in their position, refilling, closing the water supply in that area, dewatering and restarting the water supply, etc. complete as directed by Engineer-in-charge for following diameters of existing pipeline, irrespective of diameter of branch line. (The number of joints involved will be paid separately depending upon the nature of joints and required pipes, valves and specials will be supplied free of cost at stores.)						<b>1849544.68</b>
	<b>MJP 18-19,Page No.73, item no. 10</b>						

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
	Work shall be measured and paid as per the units and rates given in MJP schedule, MJP 18-19,Page No.73, item no. 10						
i)	Dia.100	Nos.					
ii)	Dia.150	Nos.					
iii)	Dia.200	Nos.					
iv)	Dia.250	Nos.					
v)	Dia.300	Nos.					
vi)	Dia.400	Nos.					
vii)	Dia.500	Nos.					
13	<b>Dewatering</b> the excavated trenches and pools of water in the building trenches / pipeline trenches, well works by using pumps and other devices including disposing off water to safe distance as directed by engineer-in-charge (including cost of machinery, labour, fuel), etc. complete.	HP/hr	618.00	64.00	3.20	67.20	<b>41529.60</b>
	<b>MJP 18-19,Page No.50, item no. 14</b>						
14	<b>Refilling the trenches</b> with available excavated stuff with soft material first over pipeline and then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging, etc. complete.	Cum	20868.96	66.00	3.30	69.30	<b>1446218.70</b>
	<b>MJP 18-19,Page No.50, item no. 15</b>						
15	<b>Filling in plinth</b> and floors / trenches with approved murum from excavated materials from foundations in 15cm to 20cm layers including watering and compaction, etc. complete.	Cum	2713.77	66.00	3.30	69.30	<b>188064.36</b>
	<b>MJP 18-19,Page No.51, item no. 16</b>						

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
16	Providing and laying in situ cement concrete <b>M-15</b> of trap/granite/quartzite/gneiss metal for foundation and bedding including bailing out water, formwork, compaction, curing, etc. complete.						
	a) In PCC M-100	Cum	15.00	3751.00	187.55	3938.55	<b>59078.25</b>
	<b>MJP 18-19,Page No.59, item no. 1</b>						
17	<b>Carriage of surplus</b> excavated material over distance exceeding 50m includig loading and unloading.	Cum					<b>5310312.30</b>
	<b>MJP 18-19,SectionC-(transportation), Lead Statement VI,Page No.30</b>						
18	Providing and casting in situ cement concrete of trap granite/quartzite/gneiss metal for RCC work in foundation like raft,grillage,strip foundation and footing of RCC columns and steel stanchions including normal dewatering,form work,compaction,finshing and curing,etc.complete ( by weigh batching or mix design for M-250 and M-300 only.Use of L&T,ACC,Ambuja,Birala Gold,Manikgad,Rajashree etc. cement is permitted.( excluding M.S. or Tor Steel)						
	<b>MJP 18-19,Page No.59, item no. 2</b>						
	For foundation						
	In RCC M-250	Cum	150.00	5183.00	259.15	5442.15	<b>816322.50</b>

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
19	Providing and fixing in position <b>steel bar</b> reinforcement of various diameters for RCC piles, caps, footings, foundations, slabs, beams, columns, canopies, staircases, newels, chhajjas, lintels, pardies, copings, fins, arches, etc. as per detailed designs, drawings and schedules; including cutting, bending, hooking the bars, binding with wires or tack welding and supporting as required, etc. complete (including cost of binding wire	MT	16.50	48500.00	2425.00	50925.00	<b>840262.50</b>
	<b>MJP 18-19,Page No.62, item no. 8</b>						
20	Lowering laying and jointing with <b>SBR</b> ruber gaskets C.I. S/S pipes of various classes with CI / MS specials of following diameter in proper position, grade and alignment as directed by Engineer-in-charge including conveyance of material from stores to site of work, including cost of jointing materials and rubber rings labour, giving hydraulic testing etc. complete.						
	<b>MJP 18-19,Page No.84, item no. 2</b>						
	<b>D.I. K-9</b>						
i)	100mm	Rmt	11,036	58.00	2.90	60.90	<b>672,110.67</b>
ii)	150mm	Rmt	4,727	79.00	3.95	82.95	<b>392,079.77</b>
iii)	200mm	Rmt	1,593	104.00	5.20	109.20	<b>173,933.76</b>
iv)	250mm	Rmt	933	135.00	6.75	141.75	<b>132,224.40</b>
v)	300mm	Rmt	2,850	152.00	7.60	159.60	<b>454,875.96</b>
vi)	350mm	Rmt	64	186.00	9.30	195.30	<b>12,460.14</b>
vii)	400mm	Rmt	70	230.00	11.50	241.50	<b>17,001.60</b>
viii)	450mm	Rmt	437	242.00	12.10	254.10	<b>110,965.47</b>
ix)	500mm	Rmt	781	280.00	14.00	294.00	<b>229,614.00</b>
x)	600mm	Rmt	617	372.00	18.60	390.60	<b>241,039.26</b>

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
21	Lowering, laying and fixing in proper alignment and position all types of C.I. <b>air valevs</b> as directed by engineer-in charge including cost of conveyance from stores to site of work, cost of all materialand giving satisfactory hydraullice testing, etc. complete. (for all class valves)						
	<b>MJP 18-19,Page No.247, item no. 10</b>						
	b) Air valve double ball (PN-1 and PN-1.6) 200mm	No	1.00	662.00	33.10	695.10	<b>695.10</b>
22	<b>Hydraulic testing</b> of C.I./D.I. pipe line to specified pressure including cost of all materials and labour and water for testing for specified length including cutting,placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments,labour,operation charges,etc.required for testing.the rate under this item shall also include cost of retesting,if necessary and reinstatement to original position using water supplied by the contractor						
	<b>MJP 18-19,Page No.93, item no. 12</b>						
	<b>D.I.-K-9</b>						
i)	100mm	Km	11.04	6,546.00	327.30	6,873.30	<b>75,855.80</b>
ii)	150mm	Km	4.73	8,763.00	438.15	9,201.15	<b>43,491.08</b>
iii)	200mm	Km	1.59	11,508.00	575.40	12,083.40	<b>19,246.44</b>
iv)	250mm	Km	0.93	14,992.00	749.60	15,741.60	<b>14,683.76</b>
v)	300mm	Km	2.85	16,892.00	844.60	17,736.60	<b>50,551.08</b>
vi)	350mm	Km	0.06	20,587.00	1,029.35	21,616.35	<b>1,379.12</b>
vii)	400mm	Km	0.07	25,549.00	1,277.45	26,826.45	<b>1,888.58</b>
viii)	450mm	Km	0.44	26,922.00	1,346.10	28,268.10	<b>12,344.68</b>

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
ix)	500mm	Km	0.78	31,039.00	1,551.95	32,590.95	<b>25,453.53</b>
x)	600mm	Km	0.62	41,385.00	2,069.25	43,454.25	<b>26,815.62</b>
23	Lowering, laying and jointly in position following CID/F Reflex valves, Butterfly valves and <b>Sluice valves</b> including cost of all labour jointly material, including nut bolts and giving satisfactory hydraulic testing etc. complete. (Rate for all class of valves)						
	<b>MJP 18-19,Page No.240, item no. 4</b>						
i)	100mm	No.	39.00	1877.00	93.85	1970.85	<b>76863.15</b>
ii)	150mm	No.	16.00	2950.00	147.50	3097.50	<b>49560.00</b>
iii)	200mm	No.	1.00	3069.00	153.45	3222.45	<b>3222.45</b>
iv)	250mm	No.	5.00	3999.00	199.95	4198.95	<b>20994.75</b>
v)	300mm	No.	23.00	4148.00	207.40	4355.40	<b>100174.20</b>
vi)	350mm	No.	3.00	5112.00	255.60	5367.60	<b>16102.80</b>
vii)	500mm	No.	7.00	7598.00	379.90	7977.90	<b>55845.30</b>
viii)	600mm	No.	4.00	8065.00	403.25	8468.25	<b>33873.00</b>
24	Providing and fixing <b>CI road box</b> including loading, unloading and carting to site of work including all necessary excavation in all types of starta and fixing in murum packing etc. complete.						
	<b>MJP 18-19,Page No.388, item no. 5</b>						
	a) 100mm x 225mm (20kg) for 100mm, 150mm, 200mm, 250mm	No.	44.00	<b>1327.00</b>	66.35	1393.35	<b>61307.40</b>
	<b>Pressure Loggers</b>						

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
25	Erection, installation, callibration, commissioning of pressure loggers at location suggested by Engineer-in-charge in all respect and as per specification given in tender.	No.	24.00	<b>13197.00</b>	659.85	13856.85	<b>332564.40</b>
	<b>(Vendor supply item)</b>						
26	<b>Residual chlorine analyser</b>						
	Erection ,installation, testing of residual chlorine analyser/metal must have automatic sensor cleaning facility at oure water sump and interfacing with PLC panel. Residual chlorine meter shall comprises of 3 components i.e. sensors, flow through assembly and transmitter with indicator and gives 2 outputs one to Local display and other to PLC including Mounting arrangement.	No.	13.00	<b>13197.00</b>	659.85	13856.85	<b>180139.05</b>
	Overall Range : 0 8mg/l (ppm)						
	Accuracy : 2% of full scale						
	Supply voltage : 230 V ac						
	Outout : 4 20 mA						
	Membrane free sensor of 2 gold plated electrodes for long term stability and reference electrode (ag/Agcl) must be provided to avoid maintenance.						
	IP 65 Nema 4 housing protection class required.						
	<b>MJP ELEC/MECH,Page No.104, item no. 5.5</b>						



**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
27	Providing, House Service Connection in M.D.P.E. (PE 100, PN 16) pipe (Single service connection) from main header to property limit, including supply and fixing of brass ferrule conforming to IS2692, all specials, clamp saddle of non-corrosive engineering plastic (Polyethylene) body moulded with Stainless steel threaded metal insert for tapping outlet, and drilling the main pipeline shall be through the chain and ratchet mechanism and the drill hole shall be perpendicular to the axis of the main pipeline, including excavation, refilling trenches, tools and tackels, etc. complete as directed.						
	<b>(RA)</b>						
	15mm	Nos.	900.00	2022.00	101.10	2123.10	<b>1910790.00</b>
	20mm	Nos.	400.00	2247.00	112.35	2359.35	<b>943740.00</b>
	25mm	Nos.	200.00	2327.00	116.35	2443.35	<b>488670.00</b>
	40mm	Nos.	10.00	3642.00	182.10	3824.10	<b>38241.00</b>
28	Providing and making lead caulked joint with molten lead to cast iron pipes and/or specials of all classes and fitting of following dia including cost of lead and all jointing material, labour, hydraulic testing etc. complete. <b>work shall be measured and paid as per the units and rates given in MJP schedule, MJP 18-19,Page No.88, item no. 4</b>	Joint					<b>200000.00</b>
29	Repairing damage water connection to house hold including labour, materials etc. complete. <b>(Work shall be measured and paid for, per number on actual quantity.) (RA)</b>	Nos.	50.00	406.00	20.30	426.30	<b>21315.00</b>
30	Repairing to the damaged drainage connection including labour, materials etc. complete. <b>(RA)</b>						<b>400000.00</b>

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
	(Work shall be measured and paid for, per running meter basis on actual quantity.)						
	SW pipe - 100mm	Rmt	1	359	17.95	376.95	
	SW pipe - 150mm	Rmt	1	394	19.70	413.70	
	SW pipe - 225mm	Rmt	1	447	22.35	469.35	
	<b>RA</b>						
31	Providing and construction RCC valve chambers in cement concrete grade M250 including RCC cover with fitting hooks etc, but excluding steel reinforcement as per design and drawing for chambers with internal sizes as follows - <b>(RA items)</b>						
	1) Sluice valve (250mm and less) - Road box	Nos	44.00	1327.00	66.35	1393.35	<b>61307.40</b>
	300mm (1.2M X 1.3M X 1.8M)	Nos	6.00	62315.00	3115.75	65430.75	<b>392584.50</b>
	350mm (1.2M X 1.3M X 1.8M)	Nos	1.00	62315.00	3115.75	65430.75	<b>65430.75</b>
	500mm (1.3M X 2M X 2.2M)	Nos	2.00	94039.00	4701.95	98740.95	<b>197481.90</b>
	2) Bulk flow meter (150mm) - 3M X 3.5M X 2M	Nos	2.00	247336.00	12366.80	259702.80	<b>519405.60</b>
	Bulk flow meter (100mm) - 3M X 3.5M X 2M	Nos	3.00	247336.00	12366.80	259702.80	<b>779108.40</b>
	3) Pressure loggers = 0.9M X 0.9M X 1.5M	Nos	24.00	40140.00	2007.00	42147.00	<b>1011528.00</b>
	4) Residual quality analyser - 0.9M X 0.9M X 1.5M	Nos	13.00	40140.00	2007.00	42147.00	<b>547911.00</b>
	5) Air valve - 1.2M X 1.2M X 1.5M	Nos	1.00	53618.00	2680.90	56298.90	<b>56298.90</b>
	6) Pressure reducing valve (for 250 and less) - 1.2M X 1.2M X 1.5M	Nos	12.00	53618.00	2680.90	56298.90	<b>675586.80</b>
	400mm (1.2M X 1.3M X 1.8M)	Nos	2.00	62315.00	3115.75	65430.75	<b>130861.50</b>
	500mm (1.3M X 2M X 2.2M)	Nos	1.00	94039.00	4701.95	98740.95	<b>98740.95</b>
32	Providing and constructing B.B. masonry valve Chamber with 15 CM thick 1:3:6 proportion PCC bedding ,excluding excavation,B.B. masonry in CM 1:5 proportion precast R.C.C frame and cover etc completed as directed by Engineer-In-Charge	Nos.	1500.00	4149.00	207.45	4356.45	<b>6534675.00</b>

**Cost Abstract of Water Supply work for Priority Road area in ABD area of Solapur Smart city**

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items .	Rate	Amount
	Note: wall thickness:0.23 M for depth of 1.2 M and 0.35 m for balance depth exceeding 1.2 M.						
	As above 60 x 45 cm internal size and depth upto 0.90 m with precast RCC slab cover.						
	MJP schedule, MJP 18-19,Page No.385, item no. 1						
						Sub Total Labour	39073381.82
						Sub total (Material + Labour)	106202505.37
						<b>Cost in Crores</b>	<b>10.62</b>



SOLAPUR SMART CITY DEVELOPMENT CORPORATION LIMITED (SCDCL)

Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs.)	Amount
1	Providing supplying in standard length (PE material) HDPE Double wall corrugated pipe for non pressure underground drainage and sewerage with smooth internal & corrugated external surface confirming to IS 16098:Part-2 2013 with spigot or plain end with necessary jointing material coupler including all statutory duties and taxes such as GST levied by Gol and GoM in all respect, transportation and frieght charges, inspection charges, loading and unloading charges conveyance to departmental store/site and stacking the same in in closed shade duly protecting from direst sun ray and rains etc. complete. Correct as above						
	MJP 18-19,Page No.205, item no. 4						
	ii) D.W.C. Class SN4						
	200 mm dia	Rmt	11910.00	533		533	6348030
	ii) D.W.C. Class SN8						
	200 mm dia	Rmt	5989.00	640		640	3832960
2	<b>R.C.C. pipes</b>						
	Providing ISI standard R.C.C. pipes in standard lengths of following class and diameter suitable for either collar joints or rubber ring joints, excluding GST levied by GOI and GOM in all respect including inspection charges, transport to departmental stores, unloading and stacking etc. complete as per IS - 458/1988						
	MJP 18-19,Page No.157, Section-I ,item no. 1						
	Class NP III						
	200 mm dia	Rmt	0	372		372	0
	300mm dia	Rmt	458	714		714	326726
	350 mm dia	Rmt	0	1188		1188	0



SOLAPUR SMART CITY DEVELOPMENT CORPORATION LIMITED (SCDCL)

Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs.)	Amount
	400mm dia	Rmt	7	1267		1267	8236
	500mm dia	Rmt	0	1683		1683	0
	600mm dia	Rmt	0	1980		1980	0
	700mm dia	Rmt	0	2772		2772	0
	800 mm dia	Rmt	0	2970		2970	0
<b>3</b>	<b>Excavation</b>						
i	Excavation for foundation / pipe trenches in earth, soils of all types, sand, gravel and soft murum, including removing the excavated material upto a distance of 50 metres and lifts as below, stacking and spreading as directed, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.						
	<b>MJP 18-19,Page No.47, item no. 1</b>						
	Lift 0 to 1.50 M	Cum	20916.42	145	7.25	152.25	3184525.69
	Lift 1.50 to 3.0 M	Cum	3157.07	157	7.85	164.85	520443.12
	Lift 3.0 to 4.50 M	Cum	321.26	169	8.45	177.45	57008.10
	Lift 4.50 to 6.0 M	Cum	122.22	181	9.05	190.05	23228.01
ii	Excavation for foundation/pipes trenches in hard murum including removing the excavated material upto a distance of 50m and lifts as below, stacking and spreading as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete						
	<b>MJP 18-19,Page No.47, item no. 2</b>						
	Lift 0 to 1.50 M	Cum	3539.57	165	8.25	173.25	613230.64
	Lift 1.50 to 3.0 M	Cum	7983.54	177	8.85	185.85	1483740.78
	Lift 3.0 to 4.50 M	Cum	642.53	189	9.45	198.45	127509.25
	Lift 4.50 to 6.0 M	Cum	244.44	201	10.05	211.05	51589.27



SOLAPUR SMART CITY DEVELOPMENT CORPORATION LIMITED (SCDCL)

Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs.)	Amount
iii	Excavation for foundation / pipe trenches in hard murum and boulders, W.B.M. road including removing the excavated material upto a distance of 50 M beyond the area and lifts as below, stacking and spreading as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.						
<b>MJP 18-19,Page No.47, item no. 3</b>							
	Lift 0 to 1.50 M	Cum	10618.71	185	9.25	194.25	2062684.90
	Lift 1.50 to 3.0 M	Cum	9424.28	197	9.85	206.85	1949412.38
	Lift 3.0 to 4.50 M	Cum	963.79	209	10.45	219.45	211503.43
	Lift 4.50 to 6.0 M	Cum	366.66	221	11.05	232.05	85083.80
iv	Excavation for foundation / pipe trenches in soft rock and old cement and lime masonry foundation asphalt road including removing the excavated material upto a distance of 50 m beyond the area and lifts as below, stacking as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.						
<b>MJP 18-19,Page No.47, item no. 5</b>							
	Lift 0 to 1.50 M	Cum	10618.71	454	22.70	476.70	5061940.23
	Lift 1.50 to 3.0 M	Cum	6276.05	475	23.75	498.75	3130180.63
	Lift 3.0 to 4.50 M	Cum	1606.31	496	24.80	520.80	836568.59
	Lift 4.50 to 6.0 M	Cum	611.10	517	25.85	542.85	331736.99
v	Excavation for foundation / pipe trenches in hard rock and concrete road by chiselling, wedging, line drilling, by mechanical means or by all means other than blasting including trimming and levelling the bed, removing the excavated material upto a distance of 50 metres beyond the area and lifts as below, stacking as directed by Engineer-in-charge, normal dewatering, excluding backfilling, etc. complete by all means.						
<b>MJP 18-19,Page No.48, item no. 7</b>							
	Lift 0 to 1.50 M	Cum	7013.36	770	38.50	808.50	5670305.54
	Lift 1.50 to 3.0 M	Cum	4700.12	791	39.55	830.55	3903682.11
	Lift 3.0 to 4.50 M	Cum	1285.05	812	40.60	852.60	1095634.99
	Lift 4.50 to 6.0 M	Cum	488.88	833	41.65	874.65	427600.64



SOLAPUR SMART CITY DEVELOPMENT CORPORATION LIMITED (SCDCL)

Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs,)	Amount
vi	Excavation for foundation /pipe trenches in Slush Muddy/ Marshy /Slushy /Soil including use of poclain, labour for dewatering during execution including removing the excavated material upto a distance of 50 metres and lifts as below, stacking and spreading as directed, preparing the bed by cleaning the mud, labour required for execution for shutterng item but excluding back filling etc. complete. Providing and fixing shuttering shall be paid separately.	cum	68.00	341.00	17.05	358.05	24347.40
	<b>MJP 18-19,Page No.48, item no. 8</b>						
4	Lowering, Laying and Jointing (PE material) HDPE double wall corrugated pipe for non pressure underground by heating to the ends of pipes with the help of teflon coated electric mirror / heater to the required temperature and then pressing the ends together against each other, to form a monolithic & leak proof joint by thermosetting process. The pressing may be required to be done with Jacks/ Hydraulic Jacks/Butt fusion machine etc. complete with all materials labours as directed by Engineer - in - charge. including to be corrected as above						
	MJP 18-19,Page No.206, item no. 5						
	HDPE PIPES FOR DRAINAGE						
	ii) D.W.C. Class SN8						
	200 mm dia	Rmt	17899.00	39.00	1.95	40.95	732964.05
5	Hydraulic testing of HDPE double wall corrugated pipe for non pressure underground line to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position.						
	MJP 18-19,Page No.207, item no. 6						
	HDPE PIPES FOR DRAINAGE						



SOLAPUR SMART CITY DEVELOPMENT CORPORATION LIMITED (SCDCL)

Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs.)	Amount
	ii) D.W.C. Class SN8						
	200 mm dia	Km	18.00	4100.00	205.00	4305.00	77490.00
6	Lowering, laying and jointing in proper grade and alignment R.C.C. pipes with collar joints in C.M.1:1 proportion or socketed R.C.C. pipes with rubber joints (excluding cost of rubber ring or R.C.C. collar,) including cost of conveyance from stores to site of work, cost of jointing material, labour, etc. complete as directed by Engineer-in-charge (For all class MJP 18-19,Page No.162, item no. 2 of pipes.) as per IS-783-1985.						
	200 mm dia	Rmt	0	75.00	3.75	78.75	0.00
	300mm dia	Rmt	458	118.00	5.90	123.90	56696.64
	350 mm dia	Rmt	0	121.00	6.05	127.05	0.00
	400mm dia	Rmt	7	155.00	7.75	162.75	1057.88
	500mm dia	Rmt	0	202.00	10.10	212.10	0.00
	600mm dia	Rmt	0	254.00	12.70	266.70	0.00
	700mm dia	Rmt	0	288.00	14.40	302.40	0.00
	800 mm dia	Rmt	0	333.00	16.65	349.65	0.00
7	Hydraulic testing of RCC pipe line to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position. New item to be added						
	200 mm dia	Km	0.00	9225.00	461.25	9686.25	0.00
	300mm dia	Km	0.46	18450.00	922.50	19372.50	8864.86
	350 mm dia	Km	0.00	19475.00	973.75	20448.75	0.00
	400mm dia	Km	0.01	24600.00	1230.00	25830.00	167.90
	500mm dia	Km	0.00	31775.00	1588.75	33363.75	0.00
	600mm dia	Km	0.00	41000.00	2050.00	43050.00	0.00





SOLAPUR SMART CITY DEVELOPMENT CORPORATION LIMITED (SCDCL)

Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs.)	Amount
	700mm dia	Km	0.00	46125.00	2306.25	48431.25	0.00
	800 mm dia	Km	0.00	53300.00	2665.00	55965.00	0.00
8	Refilling the trenches with available excavated stuff with soft material first over pipeline and then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging, etc. complete.	Cum	73780.38	66.00	3.30	69.30	5112980.58
	MJP 18-19,Page No.50, item no. 15						
9	Filling in plinth and floors / trenches with approved murum from excavated materials from foundations in 15cm to 20cm layers including watering and compaction, etc. complete.	Cum	6752.89	66.00	3.30	69.30	467975.33
	MJP 18-19,Page No.51, item no. 16						
10	Filling in plinth and floors/ trenches with contractor's murum for bedding in 15cm to 20cm layers including watering and compaction complete.	Cum	39.00	691.00	34.55	725.55	28296.45
	(MJP CSR 18-19, Item No 17 /page no.30						
11	Providing and laying in situ cement concrete M-15 of trap/granite/quartzite/gneiss metal for foundation and bedding including bailing out water, formwork, compaction, curing, etc. complete.						
	b) In PCC M-150	Cum	81.26	4079.00	203.95	4282.95	348020.87
	MJP 18-19,Page No.59, item no. 1						
12	Providing and constructing B.B. masonry circular manhole without conical shape excluding excavation, RCC 1:2:4 proportion, 20cm bedding brick masonry in CM 1:4 proportion, 23cm thick for 2m depth from top 35cm thick for 2m below it and 45cm thick for balance depth, RCC slab at top and at 2m depth from top for supporting brick masonry above it, plastering with smooth finish in CM 1:2 proportion, C.C. 1:2:4 finishing channels in smooth rendering, providing C.I. dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality S.F.R.C. frame and cover of 56cm dia. etc. complete as directed by Engineer-in-charge.						
	MJP 18-19,Page No.390, item no. 9	No					
	1.00 m dia. X 2.0 m depth	No	5.00	18781.00	939.05	19720.05	98600.25



SOLAPUR SMART CITY DEVELOPMENT CORPORATION LIMITED (SCDCL)

Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs.)	Amount
13	Providing and constructing on sewer, B.B. masonry circular manhole with concentric cone 1.2m dia. At bottom and 0.5m dia at top and upto a depth of 2m with 23cm brick work in CM 1:4 proportion excluding excavation including foundation concrete 250mm thick and haunches and channels in C.C. 1:2:4 proportion, finishing channels in smooth rendering, providing C.I. dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality S.F.R.C. frame and cover of 56cm dia. etc. complete as directed by Engineer-in-charge.						
	a) Rebate for every decrease in depth of 50cm or part there of	50 cm depth	3134.00				
	RA based on MJP 18-19, Page No.388, item no. 6						
	For 1200mm dia upto 2.0 m depth	No	678.00	21115.00	1055.75	22170.75	15031768.50
	For 1200mm dia upto 3.0 m depth	No	106.00	27423.00	1371.15	28794.15	3052179.90
	For 1200mm dia upto 4.50 m depth	No	0.00	36825.00	1841.25	38666.25	0.00
	For 1200mm dia and more than 4.50 m depth	No	0.00	46227.00	2311.35	48538.35	0.00
14	Providing and constructing on sewer, B.B. masonry circular manhole with concentric cone 1.5m dia. At bottom and 0.5m dia. At top and upto a depth of 5m with 23cm brick work, upto depth of 2m from top and 35 cm thick brick work for balance depth in CM 1:4 proportion with 20mm thick smooth plaster on both sides in CM 1:2 proportion excluding excavation including foundation concrete 250mm thick and haunches and channels in C.C. 1:2:4 proportion, finishing channels in smooth rendering, providing C.I. dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality S.F.R.C. frame and cover of 56cm dia. etc. complete as directed by Engineer-in-charge.						
	a) Rebate for every decrease in depth of 50cm or part thereof	50 cm depth		6479.00			
	MJP 18-19, Page No.389, item no. 7						
	For 1500mm dia upto 2.0 m depth	No	5.00	24333.00	1216.65	25549.65	127748.25



SOLAPUR SMART CITY DEVELOPMENT CORPORATION LIMITED (SCDCL)

Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs.)	Amount
15	Providing and constructing on sewer, B.B. masonry circular manhole with concentric cone 1.5m dia. At bottom and 0.5m dia. At top and upto a depth of 9m with 23cm brick work, upto depth of 2m from top and 35 cm thick brick work for depth of 2m and 45cm thick brick work for remaining depth upto 9m in CM 1:4 proportion with 20mm thick smooth plaster on both sides in CM 1:2 proportion excluding excavation including foundation concrete 250mm thick and haunches and chamnnels in C.C. 1:2:4 proportion, finishing channels in smooth rendering, providing C.I. dapuri type steps each weighing 5.5 kg., 1:2:4 coping and providing and fixing approved make and quality S.F.R.C. frame and cover of 56cm dia. etc. complete as directed by Engineer-in-charge.						
	a) Rebate for every decrease in depth of 50cm or part thereof	50 cm depth		8151.00			
	MJP 18-19,Page No.389, item no. 8						
	For 1500mm dia upto 3.0 m depth	No	70.00	38250.00	1912.50	40162.50	2811375.00
	For 1500mm dia upto 4.50 m depth	No	56.00	62703.00	3135.15	65838.15	3686936.40
	For 1500mm dia and upto 6.50 m depth	No	20.00	95307.00	4765.35	100072.35	2001447.00
16	Providing and constructing B.B. masonry chamber with 15cm thick 1:3:6proportion PCC bedding, excluding excavation, B.B. masonry in CM 1:5 proportion precast S.F.R.C. frame and cover, etc. complete as directed by Engineer in charge.						
	Note - Wall thickness : 0.23m for depth of 1.2m and 0.35m for balance depth exceeding 1.2m	No	500.00	11051.00	552.55	11603.55	5801775.00
	As above of 0.9x0.45m internal size and depth upto 0.9m with precast RCC slab cover.						
	Add for every increase in depth of 30cm or part thereof						
	MJP 18-19,Page No.387, item no. 3						
17	Providing 150 mm dia S.W. or R.C.C.pipes in vertical drop arrangement including providing 150 mm dia S.W.and R.C.C. pipe fixed in B.B. masonry of manhole at the required level including providing 150 mm dia double tee, 150 mm dia right angled bend, encasing in B.B. masonry 1:4 proportion all around the pipe,double tee, bend upto the foundation of manhole, jointing, cutting, filling including neat cement rendering, plugging the opening with jungke wood knob complete as directed by Engineer-in-charge ( 0.6 m depth) excluding cost of chamber						
	(MJP CSR 18-19, Item No 157 /page no. 219)						
	150 mm dia, 0.6 m depth	No	10.00	1747.00	87.35	1834.35	18343.50
	150 mm dia, 1.1 m depth	No	20.00	3081.00	154.05	3235.05	64701.00
	200 mm dia, 0.6 m depth	No	20.00	2252.00	112.60	2364.60	47292.00
	200 mm dia, 1.1 m depth	No	50.00	3712.00	185.60	3897.60	194880.00



SOLAPUR SMART CITY DEVELOPMENT CORPORATION LIMITED (SCDCL)

Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs.)	Amount
18	Repairing of Existing telephone /electric pole and cable considering the cost of excavation ,providing,lowering,laying the water supply lines,cables etc. and Including the cost of material and transportation etc.complete As directed by Engineer Incharge.	Rm	200.00	2000.00	100.00	2100.00	420000.00
19	Desposing off excavated stuff of any kind from site to work to any place which is within a lead beyond 50 m as directed etc complete ( quantity shall be paid as per the led chart provided in MJP SoR )	Cum					4427757.34
	MJP 18-19,SectionC-(transportation), Lead Statement VI,Page No.30						
20	Dewatering the excavated trenches and pools of water in the building trenches / pipeline trenches, well works by using pumps and other devices including disposing off water to safe distance as directed by Engineer-in-charge (including cost of machinery, labour, fuel), etc. complete.	HP/hr	144.00	64.00	3.20	67.20	9676.80
	MJP 18-19,Page No.50, item no. 14						
21	Open timbering in trenches of depth more than 1.5 m for shoring and strutting including use of and waste of all necessary timber works including walling, struts, open polling boards/ horizontal sheeting, runners, etc. as may be necessary and fixing and removal complete. (Measurements to be taken of the face/area timbered) (NBO Item No. 4-15 page No.59 )						
	(MJP SoR 18-19, Item No 20 /Section-E Excavation						
	Lift 0 to 1.5 M [ for non-water logged area ]	Sqm	54040.20	124.00	6.20	130.20	7036034.04
	1.50 m to 3.0 m depth	Sqm	51169.20	155.00	7.75	162.75	8327787.30
	3.00 m to 4.50 m depth	Sqm	4622.70	186.00	9.30	195.30	902813.31
	4.50 m to 6.0 m depth	Sqm	1407.30	217.00	10.85	227.85	320653.31
22	Providing dry trap / granite / quartzite / gneiss, rubble stone soling in 15cm to 20 cm thick layers (including hand packing and compacting), etc. complete.	Cum	110.40	935.00	46.75	981.75	108385.20
	MJP 18-19,Page No.51, item no. 18						
	<b>House Hold Drainage Connections</b>						
23	Excavation for foundation / pipe trenches in earth, soils of all types, sand, gravel and soft murum, including removing the excavated material upto a distance of 50 metres and lifts as below, stacking and spreading as directed, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.	Cum	1215.00	145.00	7.25	152.25	184983.75
	Lift 0-1.5m						
24	Excavation for foundation/pipes trenches in hard murum including removing the excavated material upto a distance of 50m and lifts as below, stacking and spreading as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.	Cum	202.50	165.00	8.25	173.25	35083.13



SOLAPUR SMART CITY DEVELOPMENT CORPORATION LIMITED (SCDCL)

Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs.)	Amount
	Lift 0-1.5m						
25	Excavation for foundation / pipe trenches in hard murum and boulders, W.B.M. road including removing the excavated material upto a distance of 50 M beyond the area and lifts as below, stacking and spreading as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.	Cum	607.50	185.00	9.25	194.25	118006.88
	Lift 0-1.5m						
26	Excavation for foundation / pipe trenches in soft rock and old cement and lime masonry foundation asphalt road including removing the excavated material upto a distance of 50 metres beyond the area and lifts as below, stacking as directed by Engineer-in-charge, normal dewatering, preparing the bed for foundation and excluding backfilling, etc. complete.	Cum	607.50	454.00	22.70	476.70	289595.25
	Lift 0-1.5m						



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Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs.)	Amount
27	Excavation for foundation / pipe trenches in hard rock and concrete road by chiselling, wedging, line drilling, by mechanical means or by all means other than blasting including trimming and levelling the bed, removing the excavated material upto a distance of 50 metres beyond the area and lifts as below, stacking as directed by Engineer-in-charge, normal dewatering, excluding backfilling, etc. complete by all means.	Cum	405.00	770.00	38.50	808.50	327442.50
	Lift 0-1.5m						
28	Providing supplying in standard length (PE material) HDPE Double wall corrugated pipe for non pressure underground drainage and sewerage with smooth internal & corrugated external surface conforming to IS 16098:Part-2 2013 with spigot or plain end with necessary jointing material coupler including all statutory duties and taxes such as GST levied by Gol and GoM in all respect, transportation and freight charges, inspection charges, loading and unloading charges conveyance to departmental store/site and stacking the same in in closed shade duly protectimg from direst sun ray and rains etc. complete. Correct as above	Rm	2250.00	262.00	13.10	275.10	618975.00
	MJP 18-19,Page No.205, item no. 4						
	ii) D.W.C. Class SN4						
29	Providing Laying and fixing Jointing supreme Eco-drain 110mmSN-8 Nu-drain UPVc pipes or equivalent make manufacture as per EN 13476 or equivalent as per IS 15328 with fitting such a bends ,tees,coupler ,etc Jointing with rubber lubricant including necessary excavation ,trench refilling with selective excavated material etc.complete	Rmt	12750.00	279.00	13.95	292.95	3735112.50
	(P.W.D. CSR 17-18, I.No. 43.30/ Pg.No. )						
	UPVC-110mm dia pipe						
30	Reinstating Road By Paver Block						
	Providing & fixing heavy duty interlocking concrete rubber mold glossy paving block of 60mm thickness of having strength of 400 Kg/sqm of aproved quality and shape on a bed of crush sand of 25 to 30mm thick including sticking joint and cleaning etc complete.(Using 100 % crush sand)	Sqm	1000.00	704.00	35.20	739.20	739200.00
	(PWD CSR2017-18, Item No. 33.53 Pg. No. )						
	60 mm thick M-40 grade						



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Cost estimate for Improvements to Sewerage System in Priority Road area.

Sr.No.	Description	Unit	Qty	Unit Rate (Basic SOR)	Corporation Area Charges 5% on other than supply items.	Rate(Rs,)	Amount
31	Lowering, Laying and Jointing (PE material) HDPE double wall corrugated pipe for non pressure underground by heating to the ends of pipes with the help of teflon coated electric mirror / heater to the required temperature and then pressing the ends together against each other, to form a monolithic & leak proof joint by thermosetting process. The pressing may be required to be done with Jacks/ Hydraulic Jacks/Butt fusion machine etc. complete with all materials labours as directed by Engineer - in - charge. including to be corrected as above	Rmt	2250.00	31.00	1.55	32.55	73237.50
	MJP 18-19,Page No.206, item no. 5						
	HDPE PIPES FOR DRAINAGE-135 mm dia						
32	Hydraulic testing of HDPE double wall corrugated pipe for non pressure underground line to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position.	km	2.25	3075.00	153.75	3228.75	7264.69
	MJP 18-19,Page No.207, item no. 6						
	HDPE PIPES FOR DRAINAGE-135 mm dia						
33	Removal of telephone /Electric poles including excavation and dismantling of foundation concrete and lines under the supervision of concerned department,disposal with all lifts and upto lead 1000 meters and stacking the serviceable and unserviceable material separately.	No	10.00	200.00	10.00	210.00	2100.00
	(PWD CSR 2017-18,Pg No.40,It.No.7.25)						
34	Repairing damage water connection to house hold including labour materials etc. (Work shall be measured and paid for, per number on actual quantity.)	No	100.00	406.00	20.30	426.30	42630.00
<b>TOTAL</b>							<b>108866208.22</b>
<b>Cost in Crores</b>							<b>10.89</b>