MUNICIPAL CORPORATION BHOPAL

WATER SUPPLY DISTRIBUTION NETWORK PROJECT

CONTRACT AGREEMENT

FOR

Design, Construction, Commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary substation. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete. Kolar Area

UNDER

U.I.D.S.S.M.T.PROJECT FUND, KOLAR AREA BHOPAL

Agreement Number:	**40 date 04.04.2015**
Contractor:	TAPI PRESTRESSED PRODUCTS LTD.., GAT NO 537 BANK OF TAPI RIVER ANJALE SHIVAR TALUKA YAWAL DIST JALGAON (M.H.)
Contract Price:	**51,98,95,000/-**
Date of Work Order:	**No. 780 Date 04-04-2015**
Completion Period:	**03.04.2017 (24 Month)**

CITY ENGINEER
U.I.D.S.S.M.T.PROJECT
Harshwardhan shopping Complex, phase-1
Municipal corporation, Bhopal,
Bhopal-462003 (M.P.)Phone No. 2701666
Email-pmjnbmc@gmail.com

MUNICIPAL CORPORATION BHOPAL

WATER SUPPLY DISTRIBUTION NETWORK PROJECT

CONTRACT AGREEMENT

FOR

Design, Construction, Commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary substation. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete. Kolar Area

UNDER

U.I.D.S.S.M.T.PROJECT FUND, KOLAR AREA BHOPAL

Agreement Number:	**40 date 04.04.2015**
Contractor:	TAPI PRESTRESSED PRODUCTS LTD.., GAT NO 537 BANK OF TAPI RIVER ANJALE SHIVAR TALUKA YAWAL DIST JALGAON (M.H.)
Contract Price:	**51.98.95.000/-**
Date of Work Order:	**No. 780 Date 04-04-2015**
Completion Period:	**03.04.2017 (24 Month)**

CITY ENGINEER
U.I.D.S.S.M.T.PROJECT
Harshwardhan shopping Complex, phase-1
Municipal corporation, Bhopal,
Bhopal-462003 (M.P.)Phone No. 2701666
Email-pmjnbmc@gmail.com

Office of the Municipal Corporation, Bhopal
Project Manager
JNNNURM (Water Distribution Project)
Harshwardhan Complex Phase–I Mata Mandir, Bhopal- 462003

Phone No. 0755 - 2701666, Fax No. 0755-2701666
Email: pmjnbmc@gmail.com

No. 780 /PM/JNNURM/W.S./ 2015 Bhopal, Date 04/4/15

NOTICE TO PROCEED

To,

M/s tapi prestressed products Ltd.
The metropole building adj
to inox multiplex F-2, 1st Floor, Bund
Garden Road, Pune.
Pin No.- 411001, Phone No.-02066047831/32/33

Sub:- Design, Construction, Commissioning and Performance of intake well 8.00m dia and 18.00m high with raw water pump house and approach bridge the work shall include supply installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI k-7 class pipe line for raw and clear water pumping, Feeder main, construction of Treatment Plant clear water sump well and clear water pump house and over head tanks and distribution network and HT Feeder line, domestic meter connection, SCADA Bulk metering Etc. Complete. Kolar Area of Bhopal Town Including operation and Maintenance for 120 months as per agreement after completion of project Nit No. 42 CE/JNNURM/2014-2015 Date 26.12.2014

Ref:-
1. Your Proposed against NIT no.42/PM/JNNURM/WS/14-15 date 26.12.2014 Estimate Cost Rs 502982000/- Mandatory and Technical bid open on 18.02.2015 and Financial bid open 23.02.2015
2. Approval Of MIC vide sankalp no. 02 Date 28.02.2015
3. LOA no. 380 /PM/JNNURM/WS/2015 Date 02.03.2015
4. Contract Agreement-40 Date 04.04.2015

(a) On sequence of signing the agreement this Notice to Proceed for above work is hereby issued. The time of completion shall be ~~18~~ 24 Months including rainy season.
(b) Contractor has to do operation and Maintenance for 120 months of as per agreement after completion of project.
(C) The accepted contract price for the Lump sum work is 51,98,95,000 (Fifty one corer Ninety eight lakh ninety five thousand) including tax.
(d) The programme of the work, method statements for all major activities of work and tentative dated for mobilization should be conveyed immediately
(e) The terms of payment shall be in according with that of contract document.
(f) All terms and condition of the contractor of the shall be per the contract agreement.
(g) M/s Vastu shilpi Consultant Pvt. Ltd., Shri Ram apartment-6, Malviya nagar, Bhopal. Agency on behalf of Municipal Corporation, Bhopal .
(h) A Copy of the Contract agreement is enclosed.

Encl:- As Above

Tapi Prestressed Products Ltd.
Authorised Signatory

O/C

Project Manager
JNNURM (W.S. distribution)
Municipal Corporation Bhopal

No. 781 /PM/JNNURM/WS/2015 Bhopal, Date 04/4/15

Copy to:-
1. Hon. Mayor, Municipal Corporation, Bhopal for Information Please.
2. Adhyaksha, Municipal Corporation, Bhopal for Information Please.
3. Commissioner, Municipal Corporation, Bhopal for Information Please.
4. Additional Commissioner, Municipal Corporation, Bhopal for Information Please.
5. Chief Engineer (Project), Municipal Corporation, Bhopal for Information Please.
6. Dy. Director (Finance) Municipal Corporation, Bhopal for Information Please.
7. The Asst. Engineer (Project), Municipal corporation, Bhopal
8. M/s Vastu shilpi Consultant Pvt. Ltd., Shri Ram apartment-6, Malviya nagar, Bhopal. Agency on behalf of Municipal Corporation, Bhopal .

O/C

Project Manager
JNNURM (W.S. distribution)
Municipal Corporation Bhopal

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Office of the Municipal Corporation, Bhopal
Project Manager
JNNNURM (Water Distribution Project)
Harshwardhan Complex Phase–I Mata Mandir, Bhopal- 462003

Phone No. 0755 - 2701666, Fax No. 0755-2701666
Email: pmjnbmc@gmail.com

No. 1023 /PM/JNNURM/W.S./ 2015 Bhopal, Date. 01/5/15

(Corrigendum)
NOTICE TO PROCEED

To,

M/s tapi prestressed products Ltd.
The metropole building adj
to inox multiplex F-2, 1st Floor, Bund
Garden Road, Pune.
Pin No.- 411001, Phone No.-02066047831/32/33

Sub:- Design, Construction, Commissioning and Performance of intake well 8.00m dia and 18.00m high with raw water pump house and approach bridge the work shall include supply installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI k-7 class pipe line for raw and clear water pumping, Feeder main, construction of Treatment Plant clear water sump well and clear water pump house and over head tanks and distribution network and HT Feeder line, domestic meter connection, SCADA Bulk metering Etc. Complete. Kolar Area of Bhopal Town Including operation and Maintenance for 120 months as per agreement after completion of project Nit No. 42 CE/JNNURM/2014-2015 Date 26.12.2014

Ref:- No.780-781/PM/JNNURM/W.S./ 2015 Bhopal Date 04-04-2015

As per tender, agreement and Notice to proceed period for completion of work is 18 month but as per prebid reply upload on 21-01-2015 it was accepted for completion of work is 24 months. So the period of completion of work in agreement read as 24 months in place of 18 Months, rest of all the condition remain same as per the agreement.

Project Manager
JNNURM (W.S. distribution)
Municipal Corporation Bhopal

No...../PM/JNNURM/WS/2015 Bhopal, Date.....

Copy to:-

1. Hon. Mayor, Municipal Corporation, Bhopal for Information Please.
2. Adhyaksha, Municipal Corporation, Bhopal for Information Please.
3. Commissioner, Municipal Corporation, Bhopal for Information Please.
4. Additional Commissioner, Municipal Corporation, Bhopal for Information Please.
5. Chief Engineer (Project), Municipal Corporation, Bhopal for Information Please.
6. Dy. Director (Finance) Municipal Corporation, Bhopal for Information Please.
7. The Asst. Engineer (Project), Municipal corporation, Bhopal
8. M/s Vastu shilpi Consultant Pvt. Ltd., Shri Ram apartment-6, Malviya nagar, Bhopal. Agency on behalf of Municipal Corporation, Bhopal .

Project Manager
JNNURM (W.S. distribution)
Municipal Corporation Bhopal

भारतीय गैर न्यायिक INDIA NON JUDICIAL

भारत

एक हजार रुपये ONE THOUSAND RUPEES

रु.1000 Rs.1000

सत्यमेव जयते

INDIA

प्रदेश MADHYA PRADESH R 422140

CONTRACT AGREEMENT No-40 Dt 04-04-2015

This AGREEMENT made the .....04..... day of APRIL 2015 between Commissioner, Municipal rporation, Bhopal (M.P.) (hereinafter "the Employer"), of the one part, and M/s TAPI PRESTRESSED ODUCTS LTD.., GAT NO 537 BANK OF TAPI RIVER ANJALE SHIVAR TALUKA YAWAL DIST JALGAON (M.H.) areinafter " the Contractor") of the other part.

WHEREAS the Employer desires that the Works known as Design, Construction, Commissioning nd performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach dge. the work shall include supply, installation and commissioning of raw water and clear water pumps ith necessary substation. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe ne for raw and clear water pumping Feeder main. construction of treatment plant, clear water sump ell and clear water pump house and over head tanks and distribution networks and HT feeder line, omestic meter connections, SCADA Bulk metering Etc. Complete. Kolar Area of Bhopal Town including peration and Maintenance for 120 months as per agreement after completion of project NIT No. 42 CE/JNNURM/2014-15 Date 26-12-2014 should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these works and remedying of any defects therein, Employer and Contractor agree as follows :

In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the contract documents referred to.

The following documents shall be deemed to from and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract Documents.

a) The Letter of Acceptance
b) The Letter of Bid .
c) The Particular conditions
d) The General Conditions
e) The Specification
f) The drawings
g) The Completed Schedules

Tapi Prestressed Products Ltd.

Authorised Signatory

In consideration of the payments to be made by the Employer to the contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

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

IN WITNESS where of the parties hereto have caused this Agreement to be executed in accordance with the laws of India on the day, month and year indicated above.

Signed by.....
Project Manager
JNNURM ... Distribution Project)
Mun... Corporation
for and on behalf of the Employer
in the presence of

Witness, Name, Signature, Address, Date

Tapi Prestressed Pr... Ltd.
Signed by .....
Authorised Signatory
for and on behalf of the Contractor
in the presence of

Witness, Name, Signature, Address, Date

ASHISH TRIVEDI

Harish Tyagi

कार्यालय मुख्य अभियन्ता
नगर निगम भोपाल

क्र................/जलकार्य/2015 भोपाल, दिनांक ..../......./2015

प्रति,

में तापी प्री–स्ट्रेस प्रोडक्ट्स लि.,
गेट नं. 537 बैंक ऑफ तापी रिवर,
अंजली सिवर ताल यावल जिला जलगांव

विषयः– नगर निगम भोपाल द्वारा बुलायी गई कोलार उपनगर की पेयजल योजना के लिये आपके द्वारा प्रस्तुत रू. 5198.95 लाख की निविदा के संबंध में।

नगर निगम भोपाल द्वारा बुलायी गयी कोलार उपनगर की पेयजल योजना के लिये आपके द्वारा प्रस्तुत रू. 5198.95 लाख की न्यूनतम निविदा दर की राज्य तकनीकी समिति से प्राप्त अनुशंसा अनुसार, महापौर परिषद, भोपाल द्वारा स्वीकृति प्रदान की गई है।

इस संबंध में अद्योहस्ताक्षरकर्ता के कार्यालय में उपस्थित होकर 07 दिवस में अनुबंध संपादित करने का कष्ट करें।

अनुबंध के पूर्व निविदा शर्तों के अधीन निम्नानुसार दस्तावेज प्रस्तुत करें ।

1. अर्हता शर्तों के लिये प्रस्तुत दस्तावेजों की मूल प्रति।
2. अनुबंधकर्ता के पक्ष में आपकी संस्था का अधिकार पत्र।
3. स्वीकृत निविदा राशि की 05 प्रतिशत मूल्य की, आयुक्त नगर निगम भोपाल के पक्ष में बैंक प्रत्याभूति जिसकी अवधि निविदा क्रियान्वयन अवधि से अधिक हो।

प्रभारी मुख्य अभियन्ता
नगर पालिक निगम,
भोपाल

पृष्ठा. क्र...381.... /जलकार्य/2015 भोपाल, दिनांक 02/03/2015

प्रतिलिपि :–

1. माननीय महापौर महोदय, नगर निगम भोपाल को उनके निज सहायक के माध्यम से सूचनार्थ प्रेषित।
2. माननीय अध्यक्ष महोदय, नगर निगम भोपाल को उनके निज सहायक के माध्यम से सूचनार्थ प्रेषित।
3. आयुक्त, नगर निगम भोपाल को उनके निज सहायक के माध्यम से सूचनार्थ प्रेषित।
4. श्री ए.आर पवार, परियोजना प्रबंधक (JNNURM) W/S को सूचनार्थ एवं आवश्यक कार्यवाही हेतु।
5. मेसर्स वास्तुशिल्पी प्रोजेक्ट्स कन्सल्टेंट प्रा.लि. मालवीय नगर भोपाल की ओर सूचनार्थ प्रेषित।

प्रभारी मुख्य अभियन्ता
नगर पालिक निगम,
भोपाल

Project Manger JNNURM No. 329 Dt. 8-3 Municipal Corporation, Bhopal

D:/ letter111

File

Bhopal Municipal Corporation

Water

Technical Sanction Recommendation

timate Number : 1200008967 **Date:** 26.12.2014

Description of Work : design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary s

Name of Place : .....

Ward number / Zone number : .....

Estimated Cost of Work (in number) : 502,982,000.00

(in words): FIFTY CRORE TWENTY NINE LAKH EIGHTY TWO THOUSAND Rupees

r the work mentioned above, an amount of Rs **FIFTY CRORE TWENTY NINE LAKH EIGHTY TWO HOUSAND Rupees** Only is hereby recommended for technical sanctioned and it is certified that the work is being ecuted as per

Assistant Engineer,
Bhopal Municipal Corporation

City Engineer, Water Work
Bhopal Municipal Corporation

Tapi Prestressed Products Ltd.
Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

BHOPAL MUNICIPAL CORPORATION

Water

ESTIMATE NO: 1200008967

ne of work design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water mp house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water mps with necessary s

No	Items	Qty	Unit	Rate (INR)	Amount (INR)
1	3000001165-Construction work design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping, Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete.	1	NOS	502982,000.00	502,982,000.00
				TOTAL(INR)	**502,982,000.00**

IFTY CRORE TWENTY NINE LAKH EIGHTY TWO THOUSAND RUPEES ONLY

Bhopal Municipal Corporation

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager

JNNURM (Water Supply Project)

Municipal Corporation, Bhopal

OFFICE OF THE MUNICIPAL CORPORATION, BHOPAL

Water

ESTIMATE NO: 1200008967

me of work design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water mp house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water mps with necessary s

ANNEXURE

S.No	Items	Qty	Unit	Rate (INR)	Amount (INR)
1	Miscellaneous-3000001165-Construction work design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping, Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete.	1	NOS		
				TOTAL(INR)	

Bhopal Municipal Corporation

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Tender Notification

Template Name: Two Bid Tender- Envelope A:B:C **Department:** Bhopal Municipal Corporation **Tender Status:** Cost Opened

Tender level Details

Tender No:*	BMC/TENDER NO -1938	Tender Creation Date and Time:	26-12-2014 13:38
NIT No:*	42/CE/JNNURM/2014-15	Title:	Notice Inviting Tender
Notice Invited for:	Tender	Stage:	Two Stages
Tender Call:*	First call	Currency:	Indian Rupee
Email:*	eekolar@bmconline.gov.in	Division/Basin:*	Bhopal
District:	Bhopal	Vendor Class:*	Class A
Tender Category:*	WORKS	Tender Sub category:*	Civil Works - Water Works
Period of Completion (In months):*	18	Tender Type:	Lump sum
Form Of Contract:	General		
SOR:	NA		

Field Name	Value	Field Name	Value
NIT No :*	42/CE/JNNURM/2014-15		
Name of Work :*	design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping, Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete **design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping, Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete.**		
Probable Amount of Contract (PAC) in ₹ :*	502982000	EMD in ₹ :*	515000
Cost of Document in ₹:*	50000	Processing Fee in ₹ :	1124
Purchase of Tender Start Date :*	29-12-2014 10:30	Prebid meeting Date and Time :	15-01-2015 11:00
Purchase of Tender End Date :*	02-02-2015 23:59	Bid Submission End Date :*	04-02-2015 17:30
Mandatory Subimission (Envelope A)Open Date :*	05-02-2015 15:30	Financial Bid (Envelope C)Open Date :*	12-02-2015 15:30

Reference Number :* 1002

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Tender Notification

Template Name: Single Bid Tender - Envelope A:C **Department:** Bhopal Municipal Corporation **Tender Status:** Authorized

Type	Reference No	Approved Date	File Name	Remarks	Status	Actio
Corrigendum	1003	02-02-2015 07:00 PM	1003date.doc	time extension	Approved.	
Corrigendum	1002	12-01-2015 05:01 PM	prebidmeeting.doc	prebidmeeting	Approved.	

Tender level Details — Hide Tender Details

Tender No:*	BMC/TENDER NO -1938	Tender Creation Date and Time:	26-12-2014 13:38
NIT No:*	42/CE/JNNURM/2014-15	Title:	Notice Inviting Tender
Notice Invited for:	Tender	Stage:	Two Stages
Tender Call:*	First call	Currency:	Indian Rupee
Email:*	eekolar@bmconline.gov.in	Division/Basin:*	Bhopal
District:	Bhopal	Vendor Class:*	Class A
Tender Category:*	WORKS	Tender Sub category:*	Civil Works - Water Works
Period of Completion (In months):*	18	Tender Type:	Lump sum
Form Of Contract:	General		
SOR:	NA		
Name of Work:*	design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping, Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete.	Work No:*	1200008967

Tender Fee details

Probable Amount of Contract (PAC) in :*	502982000	EMD in ₹:*	2515000
Cost of Document in :*	50000	Processing Fee in ₹:	1124

Important Dates

Purchase of Tender Start Date :*	29-12-2014 10:30	Prebid meeting Date and Time:	21-01-2015 11:00
Purchase of Tender End Date:*	13-02-2015 23:59	Bid Submission End Date:*	16-02-2015 17:30
Mandatory Subimission (Envelope A)Open Date:*	18-02-2015 15:30	Financial Bid (Envelope C)Open Date:*	20-02-2015 15:30

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

1C

Comparison Statement

Department : Bhopal Municipal Corporation
Tender Number : BMC/TENDER NO -1938
Line Number : 1200008957
Bid Sheet : price bid

Name of the Bidder/Firm :	Description	Amount (In Figures)
Gondwana Engineers Ltd	Design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping, Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete.	577,500,000.00
	Sub Total :	577,500,000.00
	Grand Total :	577,500,000.00
OFFSHORE INFRASTRUCTURES LTD	Design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping, Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete.	563,500,000.00
	Sub Total :	563,500,000.00
	Grand Total :	563,500,000.00
TAPI PRESTRESSED PRODUCTS LTD.	Design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping, Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete.	519,895,000.00
	Sub Total :	519,895,000.00
	Grand Total :	519,895,000.00
The Indian Hume Pipe Company Limited	Design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping, Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete.	560,800,000.00
	Sub Total :	560,800,000.00
	Grand Total :	560,800,000.00

opened by me

23-2-15

Tapi Prestressed Products Ltd.
Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Total Payout in Kolar Tender	
Amount (In Lacs)	**Particulars**
5198.95	Bid Price
259.95	1st Year
275.54	2nd Year
292.08	3rd Year
309.60	4th Year
328.18	5th Year
347.87	6th Year
368.74	7th Year
390.86	8th Year
414.32	9th Year
439.18	10th Year
8625.26	**Total**
O&M expenditure @ 5% has been increased @6% from 2nd year and every year thereafter	

VASTUSHILPI PROJECTS & CONSULTANTS PVT. LTD. ★
Shriram Aptts. 6, Malviya Nagar Bhopal-462003

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

PERSONAL INFORMATION

NAME (IN BLOCK LETTER'S)			
TAPI PRESTRESSED PRODUCTS LTD			
Proprietor's First name	**Middle name**	**Last name**	**Sex (Tick)** ☑
DIPESH		KOTECHA	☑ Male ☐ Female
Flat/Door/Block No	**Name Of Premises/Building/Village**		**Date of Birth (DD/MM/YYYY) As per PAN Card**
GAT No. 537	BANK OF TAPI RIVER		29/12/1974
Road/Street/Post Office	**Area/Locality**		
	ANJALE TALUKA		
Town/City/District	**State**		**Pin Code**
YAWAL- DIST JALGAON	MAHARASHTRA		

TAX Details

*PAN No. AAACT6669D	**Firm Category (Tick)** ☑	
	☑ Company	☐ Others
*TIN No. 23431201947	☐ Non Company	Please Specify.....

Note: Please Enclose the Copy of each Document's

Contact Other Detail's

Telephone No. (STD CODE)- (Telephone No) 02582-224423 Mobile No 9822375323

Email Address: if any Please Specify.
tapibhusawal@tapips.com

Type of Account *(tick as applicable ☑)* ☐ Savings ☑ Current

Bank Detail*

Name of the Bank Name	Branch Name	Branch Code	Account No
UNION BANK OF INDIA	PUNE CAMP		321701010037083

Give additional details of your bank account — IFSC Code: UBIN0532177

Note: Please Enclose the Copy of Bank Pass Book — MICR Code:

*Compulsory Field Should be Filled

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Tapi Prestressed Products Ltd.

Authorised Signatory

Pre bid Clarification (21.01.2015)

Nit no. 42/CE/JNNURM/2014-15 Date 29.12.2014 "Design, construction, commissioning and performance of intake well 8.00 m dia and 18.00 m high with raw water pump house and approach bridge. the work shall include supply, installation and commissioning of raw water and clear water pumps with necessary sub station. providing, laying, jointing and commissioning of DI K-9 and DI K-7 class pipe line for raw and clear water pumping, Feeder main. construction of treatment plant, clear water sump well and clear water pump house and over head tanks and distribution networks and HT feeder line, domestic meter connections, SCADA Bulk metering Etc. Complete."

Query	Reply
MR infrastructure (P) Ltd.	
It is requested to reduce the amount of Performance Security up to 5% of Contract amount	Agreed.
e Indian Hume pipe Co. Ltd.	
We request you to permit the use of alternate and equivalent pipe material such as Mild steel pipes or BWSC pipes as per IS 15155-2002	Pipe material shall be as per NIT only.
We request that the payment for O&M be raised to 7 % of the sanction Tender cost with 5% yearly escalation	Payment for O & M shall be @ 5 % of the Estimated Tender cost with 6% yearly escalation
ngal Tools Limited	
We request you to kindly modify the Clause of " Lead Member shall fulfill a minimum of 50% of the Financial eligibility Criteria and all members shall cumulatively shall meet the technical eligibility criteria	As per NIT
We request you to release interest free mobilization advance payment of 10% of the project cost for better management of cash flow and timely and qualitative completion of the project	Not Agreed
We request to amend the Billing breakup	As per NIT
We request you to clarify the lead time for processing of certified bills post submission	As per NIT
We request you to kindly clarify the schedule of retained amount	Performance Security of 5% shall be released on substantially completion of works AND A FREASH Performance security @ 5 % of total estimated cost of O&M to be given before O&M begins. The security deposit of 5% retained from RA bills shall be released after defect liability period is over.
We request you to kindly amend the clause of JV and introduce participation of "Associate" as per the following conditions of World Bank /ADB and such other funded project "In computing the Technical Capacity an Networth of the applicant/Consortium Members under the Technical capacity, Financial capacity and Net worth of their respective associates would also be eligible here under.	As per NIT only.
dwana Engineeers Limited	
Please confirm all the sites possession in place and NOC from forest department WRD (for Intake) is available.	Yes, NOC from concerned deptt. shall be arranged before award of work.
Please confirm on approach to intake as there seems to be no approach road.	Contractor shall make approach for construction purpose for WTP and Intake
In view of the above please advice to shifting of material to the site.	Contractor has to be making his own arrangement for shifting of material to INTAKE.
We would like to bring in your notice that the proposed route of pipeline from WTP to Clear water pumping station some portion is crossing through forest land and for the rest of the portion the width of road is very narrow and with both side agriculture land /Canal. This will cause problem in getting ROW (Right of Work).Therefore department shall arrange ROW prior to award of work.	Agreed.

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Tapi Treasured Hotels Pvt. Ltd.
Authorised Signatory

1. Location and site possession of OHT sides may please be confirmed before submission of tender.	Agreed, Schematic drawing showing location is attached.
We anticipate change in diameter of gravity main (Pipeline) considering maximum allowable velocity. Please confirm the design velocity and the diameter of feeder / gravity main.	As per NIT
Please confirm desired Typical arrangement for Nallah/ Canal crossings.	Drawing attached
Please confirm if sufficient place is available for clear Water Pumping station including Sump, Pump House and Electrical Substation.	Yes
Documents to be submitted in Envelope B need clarification w.r.t. point No. 6 and Point No. 8., ITCC is not required and JV agreement is to be registered prior to Agreement (page 55) and NOT along with Tender Submission.	ITCC stands deleted and JV agreement has to be registered prior to signing the contract agreement.
It is suggested that the HT pumps suitable for 33 KV / 6.6 KV input may be used as they have better life and performance.	**For Raw water pumps/ WTP** ; there shall be one common substation with standby arrangement of transformer of suitably designed capacity with voltage ratio of 33KV/0.43KV as per the requirement of electric load . **For clear water pumping station**; there shall be HT pumps and hence suitably designed HT panels with battery room etc subject approval from electrical inspector. However one electric substation of suitably designed capacity with standby arrangement of transformer of 33KV/6.6KV is provided as per the requirement of electrical load.
Please confirm for provision of DC supply /with Battery room for operation of HT Panels etc.	Yes, This is to confirm that provision of DC supply through Batteries to operate HT panels is to be made with no extra cost.
With regards to Domestic water Meters /House Service connections, we request detail scope of connection/GAD. We also suggest AMR (Automatic Meter Reading) ready meters / AMR compatible meters may be used which will help in automatic reading and Billing of Consumers.	Contractor has to provide 15 mm dia water meter ready/compatible for automatic reading , that can be converted for automatic reading by providing suitable attachment if required so.
With regards to SCADA Bulk Metering, we request detailed scope of Work. Further Please confirm scope of SCADA/PLC is limited to discharge / Flow rate and pressure for complete lines in Intake well, WTP and OHT only.	Clear water pump / motor and all valves in clear water pumping station are to be operated by automation through SCADA/PLC system. Similarly All valves of OHT sites are to be operated by automation through SCADA/PLC. Data of All Flow meter are to be accessible to SCADA/PLC with one SCADA control room at Pump house.
With regards to payment of EMD, as given at Page no. 9 , EMD is allowed in form of DD/ FDR but at page no. 12, clause 8 EMD is required to be paid online. Plesae clarify and Confirm Payment of EMD by FDR / DD only. According the necessary provision may please be made to enclose scan copy of EMD in ONLINE Tendering.	As per NIT; EMD to be submitted on line.
Please referrer Pump specifications for Clear Water (HSC pumps), it is given Discharge 174 lps at 110 m Head at page no. 104 while the same is given as 170 m at Page No.	174 LPS with 110 m head.

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation

There is lack of clarity with regards to substation to be provided, please refer page no. 115 wherein it is given as 1350 KVA transformer to be installed in substation of 33 KV/ 54 KVA ? at point no. 1. At point no. 2 & 2.1, it is given as 33 KV/ 3.3 KV 1350 KVA electric substation. However at sr. no. 2.2, the transformer specified is 1350 KVA, 33/0.44 KV ?.while at page 117, Transformer specifications say 1350 KVA, 33/3.3 KV Please confirm what is provisioned for.	**For Raw water pumps/ WTP** ; there shall be one common substation with standby arrangement of transformer of suitably designed capacity with voltage ratio of 33KV/0.43KV as per the requirement of electric load . **For clear water pumping station**; there shall be HT pumps and hence suitably designed HT panels with battery room etc subject approval from electrical inspector. However one electric substation of suitably designed capacity with standby arrangement of transformer of 33KV/6.6KV is provided as per the requirement of electrical load.
3. Please confirm on liability on account of damages to the pipe line / equipment & other facilities constructed for reasons not attributable to the Bidder especially during O & M period.	Contractor shall be paid as per actual on UADD SOR latest available for the damages to pipeline/equipment and other facilities for reasons not attributable to Contractor.
4. Regarding WTP, please specify the Design Parameters such as Minimum Area for Office Room, Laboratory, Chemical House, etc. Otherwise we shall design WTP as per specifications and parameters specified in CPHEEO Manual. Pl. also confirm the min. area of clear water pump house	All the design parameter shall be as per CPHEEO manual after considering 23hr pumping /day. The min. Area of various critical components shall be as follows- 20 m2 for office, 20 m2 for laboratory, 20 m2 for chemical house, 15m2 for Chlorinator room, 30 m2 for Cl2 store / Tonner room; 6 m2 for one no. WC/ bath etc and sizes of other units such as filter house, chemical store, Blackwash, CLF, FM, pipe gallery etc shall be as per design requirement and Min. area for clear water Pump house/panel/Control room/store shall be150 m2.
5. Further please also confirm that all the operations of WTP are Mechanical / Manual type and not to be controlled by SCADA/PLC.	Operation of WTP shall be as per conventional manual type.
6. O&M is very low. It is to be based on actual cost to be incurred	Cost of for O & M shall be paid @ 5 % of the Estimated Tender cost with 6% yearly escalation for proceeding years.
7. Cost of house connection and dis connection should be atleast Rs 1500 or labour charges and material cost shall be as current market price	The connection & disconnection charges shall be @ Rs 1500 & material cost as per latest SOR of UADD MP
8. What would be the rating of HT line and expected length of HT line at intake /WTP/clear pump House etc. Please confirm about ROW etc for lying of HT line. Please confirm contractor scope is limited to providing & laying HT line and installation of suitable substation only . The cost of connection charges , securities and supervision charges shal be born by Municipal Corporation Bhopal.	The scope of HT line of 33KV is considered as 4 KM under the contract for both electrical substations. Any variation in length of HT line of 33KV shall be adjusted in contract price as the case may be as per the sanctioned estimate of MPEB. Clear ROW for laying HT line will be made available to the contractor. The BMC shall bear cost of connection charges/ supervision/ securities for required electric load to feed proposed HT line/ electrical substation installed under contract .
9. Please confirm the rating / voltage ratio of substation on each pumping station. In view of controlled line losses /maintenance; please confirm that you need HT pump for Clear water (HSC pump) and LT pumps for raw water pump (VTpump) . If so HT panel & supporting Battery room etc will cost more as compared to LT panels.	**For Raw water pumps/ WTP** ; there shall be one common substation with standby arrangement of transformer of suitably designed capacity with voltage ratio of 33KV/0.43KV as per the requirement of electric load . **For clear water pumping station**; there shall be HT pumps and hence suitably designed HT panels with battery room etc subject approval from electrical inspector. However one electric substation of suitably designed capacity with standby arrangement of transformer of 33KV/6.6KV is provided as per the requirement of electrical load
10. Pl. confirm, Only soft starters shall be used but not the star- delta transformers.	YES, only soft starter are to be used in panels

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Please add make for pumps/motor as flowmore, mather&plant, WPIL, Jyoti as approved brand.	The approved make for PUMPs and Motors shall be as per NIT.
Pl. confirm surge / water hammer protection work is to be provided by the bidder for Clear water pump. And you have ample space for the provision of such work. Please confirm the type of surge protection is acceptable to you.	Contractor has make provision for water hammer protection in pump house under the contract if required so and no separate payment shall be made on this account.
Please confirm what would be the capacity of C.W. sump at WTP if at all it is required.	Miminum 350 KL capacity clear water sump is to be provided at WTP site in addition to 700KL capacity sump at Clear water pumping station.
In WTP pl. confirm that a cascade aerator of designed capacity is required as Inlet chamber.	YES, suitably designed CASCADE AREATOR is to be provided in the inlet of proposed WTP
All the connecting pipe inside WT P and OHT shall be of DIDF pipe or CIDF. Whereas all pumping header shall be of MS pipe of 8mm min. thickness with epoxy coating out side. All drainage work shall be done with RCC NP2 / PVC/HDPE etc.	Agreed
We as Gondwana Engineers are Ltd. have using our own manufactured WTP equipment for CLF BRIGE, F.M., Stirrers , which are basically fabrication structures with some standard moving parts. We have been successfully running more than 200 WTP all across the country. Regarding WTP equipment we propose following specification in house manufacturing with satisfactory third party inspection (RITES/SGS/CEIL/IPL etc)	AGREED
All Motors- Crompton Greaves/KEC	
All gears – Eleckon	
All str. Steel- TATA/SAIL/VINL/JINDAL/ESSAR	
We hope there is no work of Boundary wall / staff quarter in any of component of proposed scheme under the scope of contract.	All component shall be covered by Boundry wall as detailed below . Minimum staff quarters shall be as follows **BOUNDRY WALL-** A RCC panelled structure supported on RCC column placed @ 3m c/c with brick work of CM1:6 for 1.50 mtr ht. from avg. GL. Total length of boundary wall is considered as 320 mtr in WTP; 180 mtr on each tank (5 nos) ; 240 mtr on pump hose as per approved Drawing – Design. **Staff Quarter-** 4 nos at WTP site & 1 no at Pump House / LIG/ Framed structured House each for min.550 ft2 with IPC flooring and steel framed doors/window etc as per approved Design –drawing of staff quarter .
28. Please specify the scope of laboratory .	There shall be a laboratory of class- I as per CPHEEO for Physical & Chemical tests of RAW/clear water
29. Please specify clearly the contract period, completion period, trail run period. defect laibilty period and operation & maintenance period.	The Work completion period is 24 months. Where as the trial run of 3 months shall begin after completion of work. Defect liability period is 12 months after completion of work. Thus contract period is for 36 months. Operation & Maintenance period of 10 years shall begin after completion of three month of trail run .

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Dhule

Vapi Prestressed Products Ltd.
Authorised Signatory

Please make provision of substantially completion of project if project is serving its purpose by supplying clear water to the consumers and few thing are still left to be complete das per the contract but not effecting the performance of scheme. Therefore performance security may be released after scheme is substantially completed.	When scheme begins supply of portable water to the larger section (95 % approx) of distribution network and some unimportant things are still remained to be completed. The work shall be deemed as substantially completed and such remained small things, which actually do not affect the purpose of project shall be completed in all respect during defect liability period and payments shall be done proportionately after completion of such works as per schedule of payment in the said contract. The Performance Security shall be released after scheme is substantially completed.
Please confirm as & when Performance security and Security deposit shall be released. Please allow Bank Guarantee/TDR also for both securities.	Performance security can be converted in BG or TDR . The performance security shall be released after completion of Work/project. The security deposit shall be released after completion of defect liability period.
Please specify how many nos / location of control valves to be provided in clear water Feeder	Feeder to each reservoir shall have controlling facility by providing sluice/ butterfly valve manually at the vicinity of its branch of feeder network in addition to inlet pipe at site of OHT/ PW sump. All controlling valves / flow meter/ bulk meter shall be fitted with Dismantling joint having suitable sized valve chamber.
Pl confirm the location of pressure gauges/flow meter/Bulk meter to be provide in the entire scheme.	Suitable Pressure Gauge & Flow meters (SCARDA/PLC accessible) fitted with Dismantling joint to be provided at delivery end of WTP & Intake and at inlet / outlet to every OHT & Pump House .
Pl. confirm the location/ nos of Air valves with size & its type in the feeder.	Double acting Kinetic air valve with size as 1/5 dia of feeder pipe, suitably located in all heaps or minimum one air valve in each length of 500m.
Pl. confirm the location/ nos of Score valves with size in the feeder.	Raw water feeder shall have minimum three scour valves size ¼ dia of pipe suitably located in Nalla crossings/lowest portion. In Clear water feeder, minimum one scour for each branch to OHT.
Pl. confirm that in road crossings in some place , we may be allowed MS pipe if required to lay through pushing as trenchless procedure of laying.	Agreed only on unavoidable circumstances & Payment shall be dealt as per variation clause of tender.
Pl. confirm in distribution we may allowed subject to approval from engineer in charge that in road crossing or in critical area of susceptible to damage, MS casing may also be allowed for crossing HDPE pipes.	Agreed & Payment shall be dealt as per variation clause of tender.
Pl. confirm the if distribution network are to be divided in sub zones by admitting control valves.	Yes, minimum one controlling valve shall be provided for each sector of Distribution network covering not more than total length of 10 KM (approx) of distribution.
Please confirm that sub break up of payment schedule given in tender shall be allowed on proportionate basis for the purpose of payment of any component for intermediate stages, if request by the contractor.	For Intermediate stages of progress on any component may be evaluated & paid in accordance to the schedule of payment on pro-rata basis but in any case percentage of payment allocated to any stage as per tender should not be exceeded.
In view of such innovative & very stringent service level obligation including delivery of water Bills to consumers on part of contractor during Operation and Maintenance period , penalty for service delay on complaint etc , shall attract more cost of operation. In any case it should not be	The Cost of Operation & Maintenance shall be paid 1st year as 5% of estimated bid cost and subsequent years it shall be increased by 6% on base rate for each proceeding year to come.

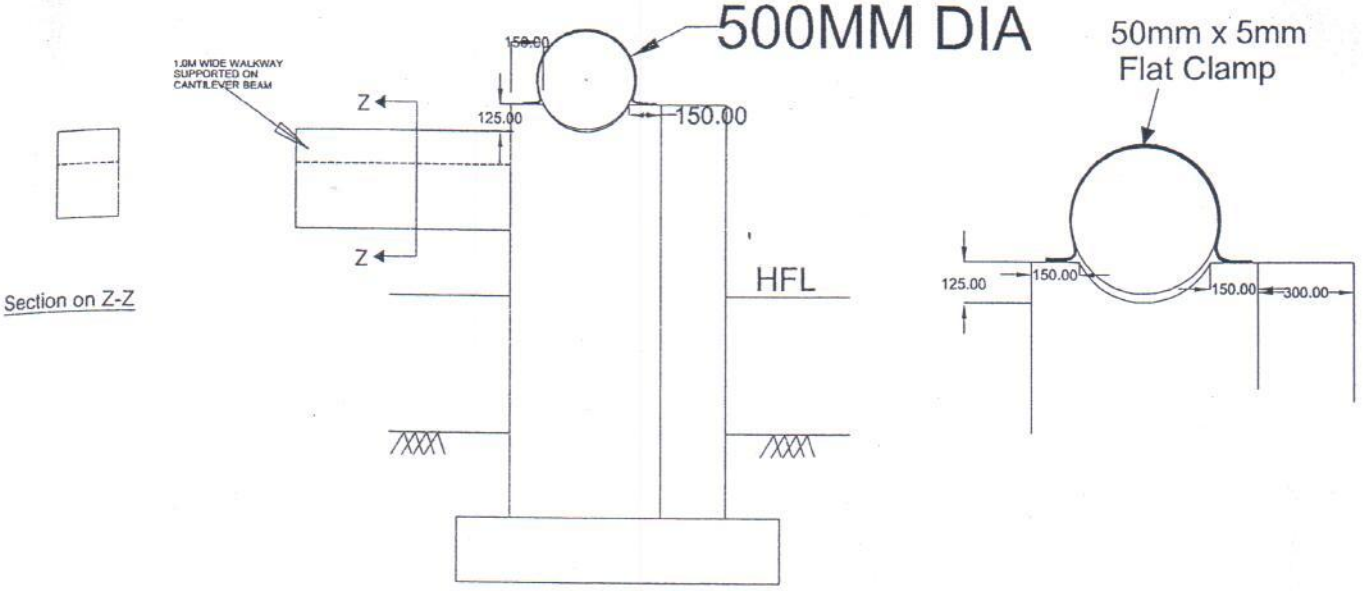
Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Executive Engineer
Public Health Engineering

less than 6% of estimated bid cost put to tender.	
1 Please Clarify the Scope of SCADA/PLC	Clear water pump / motor and all valves in clear water pumping station are to be operated by automation through SCADA/PLC system. Similarly All valves of OHT sites are to be operated by automation through SCADA/PLC. Data of All Flow meter /Bulk meter are to be accessible to SCADA/PLC with one SCADA control room at Pump house.

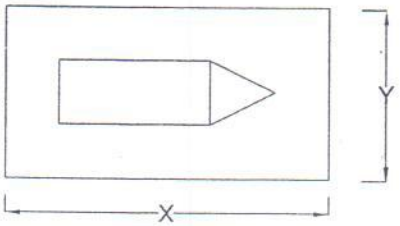
Project Manager
JNNURM (Water Supply Project)
Municipal Corporation, Bhopal

TYPICAL DRAWING FOR NALA CROSSING FOR TENDER PURPOSE ONLY.

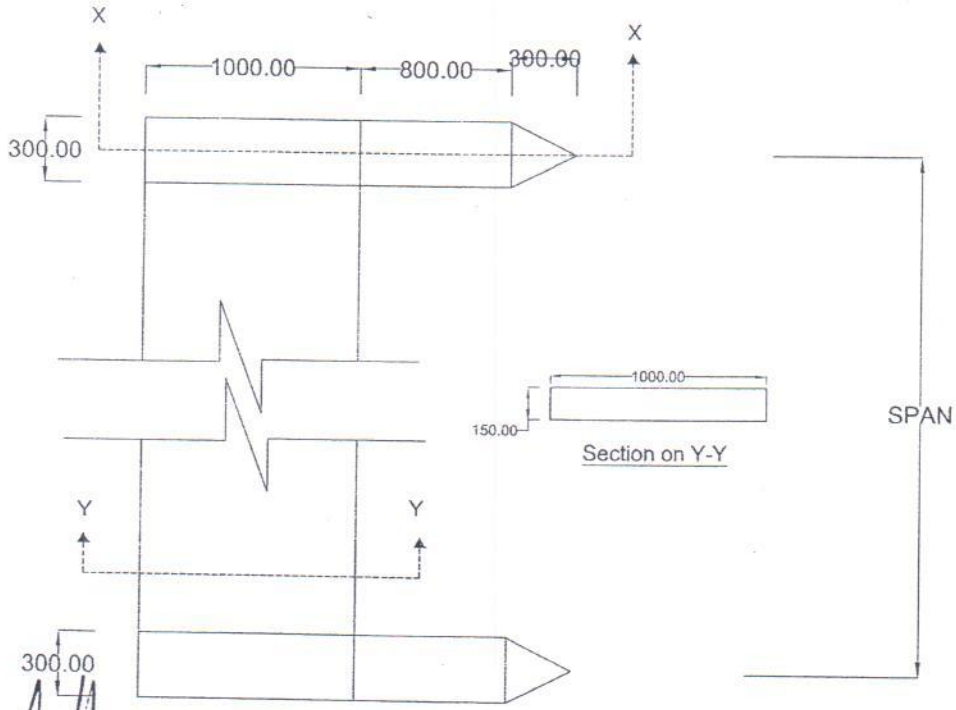


Section on Z-Z

Section on X-X



PLAN OF PEIR



Section on Y-Y

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Tapi Prestressed Products Ltd.

Authorised Signatory

OFFIC OF THE EXECUTIVE ENGINEER
KOLAR PROJECT DIVISION NO.1
MUNICIPAL CORPORATION BHOPAL

No.42 /CE/JNNURM/M.C.Bhopal/2014-15 Bhopal Dated: 26-12-2014

Notice inviting Tender

Online **Lump Sump** Rate Tenders are invited on **Form 'F'** from the experienced appropriate class of contractors registered in office of the E.N.C.M.P. Public works department, Govt. of Madhya Pradesh (Centralized Registration Cell) for the work of **Design, Construction, Commissioning & performance of Intake well 8.00 m dia. & 18.00 m high with Raw water pump house and approach bridge. The work shall include Supply, Installation & Commissioning of Raw water & Clear water Pumps with necessary substation. Providing Laying, jointing & Commissioning of Di K-9/Di K-7 class Pipe for Raw/Clear water pumping/Feeder main. Construction of Treatment Plant clear water sump well and Clear water pump house and overhead tanks & distribution network and HT Feeder line, Domestic meter connections, SCADA Bulk metering etc. complete.** so as to be submitted bid online. The tender documents can be obtained online on the website **http://mpeproc.gov.in** as per the Key Dates in the Notice published on the above website and detailed information can also be seen on website. Corrigendum for this NIT shall not be issued separately in newspapers. Corrigendum regarding correction can be seen on the website.

Probable Amount of Contract	: **Rs.5029.82 Lakh**
Cost of tender form	: **Rs.50000/-**
Earnest Money	: **Rs.25.15 Lakh**
Time of completion of work	: 18 Months including rainy Season.
Last date for purchase of bid document	: 02-02-2015 up to 23.59 PM
Submission of Tender on line only (Date and time)	: 04-02-2015 up to 17.30 PM
Opening of Tender on line (Date and time)	: 05-02-2015 at 15.30 PM
Pre Bid meeting	: 15-01-2015 at 11.00 AM

Earnest money & Cost of Document shall be deposited online in favour of Commissioner, Bhopal Municipal Corporation, Bhopal.

Tender documents can be seen/downloaded after payment of document cost via online payment gateway of E-tendering portal.

For further details and clarifications please contact office of Executive Engineer (Kolar), PHE Campus Mata Mandir near New Market, Municipal Corporation, Bhopal and website-**http://www.mpeproc.gov.in** (System NIT No. 1938)

Executive Engineer (Kolar)
Municipal Corporation
Bhopal

Commissioner
Municipal Corporation
Bhopal

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Tapi Prestressed Product...

Authorised Signatory

Municipal Corporation. Bhopal M.P.

BID DOCUMENT

WATER SUPPLY PROJECT

at

MUNICIPAL CORPORATION BHOPAL (M.P.)

(Under UIDSSMT Scheme)

December 2014

Project Manager
JNNURM (Water Supply Project)
Municipal Corporation, Bhopal

Office of The Municipal Corporation. Bhopal M.P.

NIT No. 42 /WS/2014 Date : 26-12-2014

WATER SUPPLY PROJECT
(UNDER UIDSSMT Scheme.)

TENDER DOCUMENT

DESIGN, SURVEY AND CONSTRUCTION OF INTAKEWELL OF CAPACITY 29.00 MLD, OVERHEAD TANKS, WATER TREATMENT PLANT 29.00 MLD CAPACITY, RAW & CLEAR WATER PUMPS, RISING AND FEEDER MAINS INCLUDING DISTRIBUTION NETWORK HOUSE METER CONNECTIONS FOR 29.00 WATER SUPPLY PROJECT

Estimated Cost	:	**Rs 5029.82 Lacs**
Cost of TENDER Document (To be paid online)	:	**Rs 50,000/-**
Online Service Charges (To be Paid Online)	:	**As Applicable**

Key Dates

Purchase of Tender Start Date:	29-12-2014 10:30	**Pre-Bid Meeting Date and Time:**	15-01-2015 11:00
Purchase of Tender End Date:	02-02-2015 23:59	**Bid Submission End Date:**	04-02-2015 17:30
Physical Submission End Date:	05-02-2015 14:00	**Mandatory Submission (Envelope A) Open Date:**	05-02-2015 15:30
Technical Proposal (Envelope B) Open Date:	05-02-2015 15:31	**Financial Bid (Envelope C) Open Date:**	12-02-2015 10:30

Note: Original term deposit receipt of earnest money deposit and affidavit shall be submitted by the bidder so as to reach the office as prescribed in NIT for e-Tenders by "Physical Submission End Date" mentioned above.

NOTE: THE ABOVE KEY DATES ARE INDICATIVE, URBAN LOCAL BODIES SHALL CHANGE THE KEY DATES AS PER THEIR REQUIREMENTS.

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

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Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Tapi Prestressed Products Pvt. Ltd.
Authorised Signatory

CHECK LIST

1. Three envelope system shall be followed, but bidder have to submit two envelopes physically also i.e.
   a. Envelop A: EMD details,
   b. Envelop B: Technical Bid.

   Note: Please note that in any case if price-bid/Financial Offer submitted manually then bid shall be out through rejected.
2. Earnest money should be in the form as given in clause 2.2 of instruction to BIDDER (in Envelope A)
3. The contractor shall submit online form 'F' appendix 2.18 given on page 52 to give lump sum offer in Envelope 'C'. Contractor is further advised to enclose schematic drawing & design along with the TENDER or as decided in Pre-Tender meeting.
4. Declaration of the contractor for the correctness of the documents.
5. The contractor should sign all the pages in which he make any entry as well as submit the scanned copies online.
6. Performance security shall be 5.0% of the cost put to TENDER to be submitted in the form of Bank guarantee as per clause 20.1 of ITB at the time of agreement.
7. Bidder should enclose the certificates in support of his experience.
8. Rates given by the Contractor shall be exclusive of Excise Duty. (See clause 1.07 of General guidance and Rules for Contractors)
9. This is a lump sum design TENDER & all data given in this document related to the Works executed in this contract are regressive in nature. Bidders are advised to check the correctness of the data &prepare & submit designs accordingly .No claim whatever shall be entertained in this regard during the concurrency of contract.
10. The Operation and Maintenance Period shall be for Ten years (120 months) after successful completion of the works. Contractor shall be paid for Operation and Maintenance of the Water supply scheme as per SLOU. The details of payment can be seen in Payment Schedule.
11. The amount put up to TENDER does not include the cost of Operation and maintenance of the project for ten years. The lumpsum offer to be given by bidder shall be only for the execution of works.
12. Contractor shall ensure proportionate progress in all the components of the projects for timely completion.

MANDATORY SUBMISSION

1.0 Copy of valid Registration on appropriate category in any Stage or Central Government department.

2.0 Copy of certificates in support of experience of similar nature works as per tender conditions.

3.0 Details of EMD submission

4.0 Copy of PAN card

5.0 Copy of Provident Fund (PF) registration

6.0 Affidavit as per Annexure 'H'

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Section - A

OFFICE OF THE EXECUTIVE ENGINEER, KOLAR PROJECT DIVISION NO. 1 MUNICIPAL CORPORATION, BHOPAL (M.P)

(First CALL)

NIT No. 42/CE/ JNNURM/M.C. Bhopal/2014-15/ BHOPAL Date : 26/12/2014

DETAILED NOTICE INVITING TENDER

Online Lumpsum Rate Tenders are invited on Form 'F' from the experienced appropriate class of contractors registered in office of the E.N.C. M.P. Public Works Department Govt. of Madhya Pradesh (Centralised Registration Cell) for the following work so as to be submitted bid online,

1	2	3	4	5	6
Name of the work	**Probable amount of contract (In Lacs)**	**Earnest Money (In Rs)**	**Time of Completion**	**Class of Registration**	**Cost of Tender Document**
Design, Construction, Commissioning & performance of Intake well 8.00 m dia. & 18.00 m high with Raw water pump house and approach bridge. The work shall include Supply, Installation & Commissioning of Raw water & Clear water Pumps with necessary substation. Providing Laying, jointing & Commissioning of DI K-9/DI K-7 class Pipe for Raw/Clear water pumping/Feeder main. Construction of Treatment Plant clear water sump well and Clear water pump house and overhead tanks & distribution network and HT Feeder line, Domestic meter connections, SCADA Bulkmetering etc. complete.	5029.82	25,15,000	18 months including rainy season.	'A'of GoMP	50,000

1. Tender documents can be purchased only online from http://www.mpeproc.gov.in by making online payment as applicable as online processing charges. The last date of purchase of tender document is as mention in keydates.

2. The bid data should be filled and the bid seals of all the envelops and the documents which are to be uploaded by the bidders should be submitted online up to as per time schedule (Key dates).

3. The mandatory submission envelope "A" and technical terms and conditions envelope "B" shall be opened according to key dates in the presence of the tenderers or their authorized representatives if willing to present. However if, there are no conditions in the envelope "B" contrary to NIT, the financial offer "C" shall be opened immediately after opening of envelope "B.

4. Earnest money & cost of Tender Document shall be deposited online in favor of Commissioner Municipal Corporation, Bhopal via payment gateway provided by www.mpeproc.gov.in. All documents required to be submitted by bidder should reach the office of undersign as per Key dates.

5. Firms and contractors participating in the tender shall have to furnish following documents,
   a) Valid Registration certificate in the appropriate category of GoMP or equivalent in any State/Central Government Department or Government undertaking.

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b) Certificate for executing work of water supply scheme in last 7 years, comprising of Intake well, Raw/Clear water pumping main, Water Treatment Plant, pumps, OHTs, Distribution system completed and running successfully at present.

i) Three similar completed works costing not less than the amount equal to 40 % of estimated cost.

or

ii) Two similar completed works costing not less than the amount equal to 50 % of estimated cost.

or

iii) One similar completed work costing not less than the amount equal to 80 % of estimated cost.

This certificate should clearly mention amount of Contract, Completion period as per Tender and actual completion period. (In case of WPI adjustment for cost of works the same may be furnished along with a certificate of Chartered Accountant). The certificate shall be issued from the officer not below the rank of Executive Engineer or equivalent.

c) Certified copy of audited balance sheet of last 3 years, showing the average annual turnover equal to or more than 30% of the estimated cost of the work.

d) Commercial tax registration certificate.

e) Provident Fund registration details

f) Certified Copy of PAN card

6. The Terms and Conditions regarding operation and maintenance is detailed in Service Level Agreement (SLA) enclosed with the tender document.
7. Joint ventures firms can also participate for which details can be seen in Tender Document.
8. The validity of offer shall be 180 days.
9. A pre-bid meeting shall be held in the office of undersign on 15th January 2015 11:00 AM.
10. Successful Bidder shall Operate & Maintain the water supply system for a period 10 Years from the date of successful completion of the work. The details of payment for operation and maintenance is given in tender document.

Tender Document can be seen/downloaded after payment of document cost via online payment gateway of E-tendering portal. For further details and clarifications please contact office of Executive Engineer (Kolar), PHE campus Mata Mandir near New Market, Municipal Corporation, Bhopal and website-http://www.mpeproc.gov.in (System NIT no. 1938.

Executive Engineer (Kolar)
MUNICIPAL CORPORATION, BHOPAL

Commissioner
MUNICIPAL CORPORATION, BHOPAL

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

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Section -2

INSTRUCTION TO BIDDER (Part A)

GUIDELINES TO CONTRACTORS FOR IMPLEMENTATION OF E-PROCUREMENT SYSTEM IN URBAN ADMINISTRATION AND DEVELOPMENT DEPARTMENT,GOVERNMENT OF MADHYA PRADESH

NOTE: THESE CONDITIONS WILL OVER-RULE THE CONDITIONS STATED IN THE TENDER DOCUMENTS, WHEREVER RELEVANT AND APPLICABLE.

E-Tendering:

- For participation in e-tendering module, it is mandatory for prospective bidders to get registration on website www.mpeproc.gov.in. Therefore, it is advised to all prospective bidders to get registration by making on line registration fees payment at the earliest.
- Tender documents can be downloaded from website www.mpeproc.gov.in. However, the tender document of those bidder shall be acceptable who have made online payment for the tender documents fee of Rs 50,000/- (Rs Fifty Thousand only) plus service & gateway charges, without which bids will not be accepted.
- Service and gateway charges shall be borne by the bidders.
- Since the bidders are required to sign their bids online using class-III Digital Signature Certificates, they are advised to obtain the same at the earliest.
- For further information regarding issue of Digital Signature Certificate, the bidders are requested to visit website www.mpeproc.gov.in. Please note that it may take upto 7 to 10 working days for issue of Digital Signature Certificate. Client will not be responsible for delay in issue of Digital

Signature Certificate.

- If bidder is bidding first time for e tendering, then it is obligatory on the part of bidder to fulfill all formalities such as registration, obtaining Digital Signature Certificate etc. well in advance.
- Bidders are requested to visit our e-tendering website regularly for any clarifications and/or due date extension or corrigendum.
- Bidder must positively complete online e-tendering procedure at www.mpeproc.gov.in
- Client shall not be responsible in any way for delay/difficulties/ inaccessibility of the downloading facility from the website for any reason whatsoever.
- For any type of clarifications bidders/contractors can visit www.mpeproc.gov.in and held desk contract No. 18002748484 and 18002745454.
- Interested bidders may attend the free training programme in Bhopal at their own cost. For further query please contact help desk.
- The bidder who so ever is submitting the tender by his Digital Signature Certificate shall invariably upload the scanned copy of the authority letter as well as submit the copy of the same in physical form with the offer of this tender.

Apart from that, bidder has to submit separate envelopes of

1. EMD of Rs 25,15,000/- (Rupees Twenty Five Lacs Fifteen Thousand Only) shall be payable online via payment gateway pro\vided by www.mpeproc.gov.in

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2. Technical Bid in Envelop-B with all relevant enclosures Envelop-A & Envelop-B are to be kept in one sealed envelope in physical form (as well as all the 3 Envelops must be submitted Online (The third envelope i.e. Envelope-C refers to financial proposal which has to be submitted online only). The envelopes submitted in Physical Form should be properly super scribed that this envelope contains 2 envelops of EMD and Technical bid against respective tender with due date & time of tender opening as per NIT. This envelope should be submitted physically as mentioned in Key Dates. Tenders received within specified time (e-tender as well as physical submission) shall only be opened on the date specified in presence of the bidders or their authorized representatives, whosoever may be present.

The prospective bidders, will upload scanned self-certified copies of requisite documents as required in e-tendering process. The tender documents in physical form shall be accepted 26/02/2014 17:30 Hrs. The same may be dropped in this office.

1. Those physically submitted documents will be acceptable and considered, if, same are uploaded on the website alongwith tender offer. Cognizance of other physically submitted documents (if any) shall not be taken.

2. The physically submitted envelope of documents will be opened first. The tenders received without pre-requisite EMD shall be returned unopened to the respective bidder. The tender documents fees shall not be refunded.

Earnest Money Deposit and the tender fee:-

- The Tender fee of Rs 50,000/-(Rs Fifty Thousand Only) is to be submitted by bidder by making online Payment only against Tender.

- The EMD of Rs. 25,15,000/- (Rs Twenty Five Lacs Fifteen Thousand Only) is to be submitted by bidder only in the form of FDR/DD drawn in favour of COMMISSIONER, Municipal Corporation, Bhopal. The FDR/DD of EMD shall be physically submitted in a sealed envelope super scribing "FDR/DD of EMD". The EMD must be submitted in Envelop-A.

- No Proposal will be accepted without valid earnest money deposit and Tender Document fee paid Online.

- The prospective bidders/contractors, submitting EMD envelope in physical form as detailed above for respective tender, will upload scanned self-certified copies of requisite EMD on the website alongwith tender offer. Only those physically submitted document regarding EMD will be acceptable and considered, if, same are uploaded in the website alongwith tender offer.

- Any mismatch, if found in the documents submitted in physical form and that uploaded online, the documents ONLINE shall be considered final and no justification regarding this shall be entertained by Client.

Technical bid:- Bidders must positively complete online e-tendering procedure at www.mpeproc.gov.in . They shall have to submit the documents as prescribed in the RFP online in the website.

- Hard copies of above technical offer, (uploaded in the website) must be submitted in a separate sealed envelope supers scribing "Envelop-B technical bid for Tender No:_____" . Only those physically submitted documents regarding technical bids will be acceptable and considered, if, same are uploaded in the website along with the Financial Bid.

Price bid:- Bidder shall have to submit the Price bid document as per the format given in RFP and uploaded as per instructions therein. Physical submission of price bid will not be considered. The price of technically qualified bidder shall be opened online at the notified date. The bidder can view the price bid opening date by logging into web-site.

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- On the due date of e-tender opening, the technical bid of bidders and EMD, will be opened online. Client reserves the right for extension of due date of opening of technical bid.
- Client reserves the right to accept or reject any or all tenders without assigning any reason what so ever.
- In case, due date for submission & opening of tender happens to be a holiday, the due date shall be shifted to the next working day for which no prior intimation will be given.
- Any change/modifications/alteration in the tender documents by the Bidder shall not be allowed and such tender shall be liable for rejection.

For amendment, if any, please visit www.mpeproc.gov.in web site regularly. In case of any bid amendment and clarification, the responsibility lies with the bidders to note the same from web site.

Client shall have no responsibility for any delay/omission on part of the bidder.

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INSTRUCTION TO BIDDER (Part – B)

1.0 Site Visits

1.1 The BIDDER is advised to visit and examine the Site of works and its surroundings and obtain by himself on his own responsibility all information that may be necessary for preparing the TENDER and entering into Contract. The cost of any such visits shall be entirely at the Bidder's own expense.

1.2.1 The BIDDER and any of his personnel or agents will be granted permission by the MUNICIPAL CORPORATION BHOPAL to enter upon the premises and lands for the purpose of such inspections, but only upon the express condition that the BIDDER, his personnel and agents, will release and indemnify the MUNICIPAL CORPORATION BHOPAL, their personnel and agents from and against all liabilities in respect thereof and will be responsible for personnel injury (whether fatal or otherwise), loss of or damage to property and any other loss, damage, costs and expenses however caused which but for the exercise of such permission would not have arisen.

2.0 Stamp Duty and Legal Charges

2.1 Whenever required under the Government regulations it shall be incumbent on the successful BIDDER to pay stamp duty on the contract and legal charges for preparation of the Contract Agreement as per ruling on the date of execution of Contract Agreement.

3.0 Content of TENDER Documents

3.1 The TENDER documents shall comprises of following details for the purpose of Tendering may be issued hereof,

1. Section- 1 Notice Inviting TENDER including description of works.
2. Section - 2 Instruction to BIDDER
3. Section - 3 General Condition of Contract.
4. Section - 4 Special conditions of contract
5. Section - 5 Scope of work
6. Section - 6 Tender Form F- of MP Works Manual- **Appendix : 2.18**
7. Annexure A to P
8. Drawings

3.2 The BIDDER is expected to examine carefully all instructions, conditions forms, appendix to TENDER terms, specifications, annexure, schedules and specifications, drawings in the TENDER Documents. Failure to comply with the requirements of TENDER, submission will be at the BIDDERs own risk.

3.3 The BIDDER shall be deemed to have inspected and examined the site and its surroundings and to have satisfied himself before submitting his TENDER as to the nature of site conditions having taken into account any information in connection therewith which may have been provided by or on behalf of MUNICIPAL CORPORATION BHOPAL . The extent and nature of work, the mean of communication with and access to the site, the accommodation which may require and in general shall be deemed to have obtained for himself all necessary information as to the risks, contingencies and all other circumstances influencing or affecting his TENDER.

4.0 Interpretation and Clarification of TENDER Documents

BIDDERs shall carefully examine the TENDER Document and fully inform themselves as to all the conditions and matters which may in any way affect the work or the cost thereof. Should a BIDDER find discrepancies in or omission in the specification or other documents, or should he be in doubt as to their meaning he should at once address a query in writing to Commissioner, MUNICIPAL CORPORATION BHOPAL .

5.0 Documents Comprising the TENDER.

The TENDER prepared by the BIDDER shall comprise the following components:

a. Earnest money as shown in TENDER Forms.
b. TENDER Form and Appendix to TENDER
c. Schedules of Guarantees & Particulars as may be required
d. Schedules of Supplementary Information if required
e. Lump-sum Offer

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f. Documentary evidence that the goods and services to be supplied by the BIDDER are eligible goods and services and conform to the TENDER documents.

g. A covering letter stating any other matter in relation to his TENDER which the BIDDER considers should be drawn to the particular notice of the MUNICIPAL CORPORATION BHOPAL and the Engineer.

h. Technical Specifications, Conditions of Contract, signed copies of the Addendas (if any) and specification drawings.

i. General programme for execution of the works, detailed methodology along with the detailed designs.

j. Chart showing estimated monthly labour force.

k. General performance data (updated information with special reference to current works in hand).

l. Copy of agreement between the participants of a Joint Venture.

m. List of equipment proposed to be deployed.

n. Month wise work programme within the overall period of work.

6.0 TENDER Prices

6.1 Unless stated otherwise in the TENDER Documents, the Contract shall be for the whole works as described in Technical Specifications based on the Lump-sum offer submitted by the BIDDER.

6.2 All duties, taxes and other levies payable by the contractor under the Contract or for any other cause, as of the date 30 days prior to the closing date for submission of Tenders, shall be included in the rates and prices and total contract price submitted by the TENDER.

7.0 Currencies of TENDER and Payment

The Lump-sum financial offer quoted by the BIDDER shall be entirely in Indian Rupees. All payments to the successful BIDDER, under the proposed contract, shall be made entirely in Indian rupees.

8.0 Earnest Money

8.1 BIDDER shall pay online, as part of its TENDER, Earnest Money as shown in column no. 3 of NIT at the time of submission of TENDER.

8.2 The Earnest Money shall be payable online via payment gateway pro\vided by www.mpeproc.gov.in.

8.3 Any TENDER not accompanied by an acceptable Earnest Money will be rejected by MUNICIPAL CORPORATION BHOPAL as non-responsive.

8.4 The Earnest Money of unsuccessful TENDERs will be returned in the Bank account of Bidder as promptly as possible but not later than 30 days after the expiration of the period of TENDER Validity prescribed in the TENDER documents.

8.5 The Earnest Money of the successful BIDDER will be made part of the performance security at the time of executing the agreement.

8.6 The Earnest Money may be forfeited

a. If a BIDDER withdraws his TENDER during the period of validity specified by the BIDDER on the TENDER Form; or

b. In the case of successful BIDDER if the BIDDER fails within the time limit to:

i. Sign the contract agreement or

ii. Furnish the required performance security.

8.7 No interest shall be paid on any Earnest Money.

9.0 TENDER Validity

9.1 TENDER shall remain valid and open for acceptance for a period of one hundred and Eighty (180) calendar days after the date of TENDER opening.

9.2 In exceptional circumstances, prior to expiry of the original TENDER validity period, the request and the response thereto, shall be made in writing. A BIDDER may refuse the request without forfeiting his TENDER Security. A Bidder agreeing to the request will not be required, nor be permitted to modify his TENDER but will be required to extend the validity of his TENDER Security correspondingly. The provisions of clause hereinbefore regarding discharge and forfeiture of TENDER Security shall continue to apply during the extended period of TENDER Validity.

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9.3 Failure to sign the TENDER will result in rejection of the TENDER.

10.0 Variations in TENDER Conditions

No Variations in TENDER Conditions

BIDDER shall submit offers which comply fully with the requirements of the TENDER documents.

11.0 Format and Signing of Tenders

11.1 The TENDER shall be typed and digitally signed by a person or persons duly authorised to bind the BIDDER to the Contract. Scanned copy of Letter of authorisation shall be furnished with the TENDER.

11.2 Only one TENDER shall be submitted by each BIDDER. No BIDDER may participate in the TENDER of another for the same contract in any relation whatsoever. The complete TENDER shall be without alterations interlineations or erasure, except those to accord with instructions issued by the MUNICIPAL CORPORATION BHOPAL or by the person or persons signing the TENDER.

11.3 If the TENDER is made by a limited company or a limited CORPORATION, it shall be signed by a duly authorised person holding power of attorney for signing the TENDER in which case a certified copy of the power of attorney shall accompany the TENDER.

Tenders submitted by a joint venture of two or more firms as partners shall comply with the following requirements

a. the TENDER and in case of successful TENDER, the Contract Agreement shall be signed so as to be legally binding on all partners.

b. one of the partners shall be nominated as being in charge and this authorisation shall be evidenced by submitting a power of attorney signed by legally authorised signatories of all the partners.

c. the partner in charge shall be authorised to incur liabilities and receive instructions for and on behalf of any and all, partners of the joint venture and the entire execution of the Contract including the payments shall be done exclusively with the partner in charge;

d. a copy of joint venture agreement confirming above aspects, duly signed by legally authorised signatories of all the partners in the presence of a magistrate of an Indian Court of Law/Notary Public, on a stamp paper shall be submitted with the TENDER.

11.4 All witness and sureties shall be persons of status and probity and their full names occupations and addresses shall be stated below their signatures.

11.5 The TENDER document should be digitally signed.

12..0 Sealing, making and Submission of Tenders

12.1 The Tender data should be filled and the Tender seals (hashes) of all the envelopes 'A', 'B' & 'C' alongwith the documents which are to be uploaded by the Bidders should be submitted online up to as per time schedule (Key dates). The Bidders shall have to submit their Tenders online (decrypt and encrypt the Tenders) and upload the relevant documents from as per time schedule (key dates).

12.2 The envelope containing the complete TENDER offer shall be the following relevant identification.

i. Name of the work

ii. Reference number

12.3 The envelope shall also contain the Earnest Money furnished in the form and manner prescribed in Clause 14 hereof.

12.4 BIDDERs are requested to present the TENDER well in advance time on the stipulated due date so as to avoid rush at the closing hours.

13.0 Deadline for Submission of Tenders

TENDER MUST BE RECEIVED BY COMMISSIONER MUNICIPAL CORPORATION BHOPAL **as per online Notice.**

Any TENDER received after the deadline for submission of Tenders prescribed the same shall be rejected and returned unopened to the BIDDER.

14.0 Modification and Withdrawal of Tenders

14.1 After Submission of final offer no modification or withdrawal of Tender will be permitted.

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15.0 Opening of Tenders

15.1 COMMISSIONER MUNICIPAL CORPORATION BHOPAL or his representative will open the envelopes containing Earnest Money, Technical details and terms and condition and examine whether the TENDERs are complete whether the documents have been properly signed and whether the Tenders are generally in order. (In the presence of BIDDER representative who choose to be present. The BIDDER representatives who are present shall sign a register evidencing their attendance.)

15.2 At the Time of opening of TENDER, BIDDER names, written notifications of TENDER modifications and withdrawals if any, the presence of the requisite Earnest Money or such other details as may be considered appropriate will be announced.

16.0 Correction of Error

Tenders determined to be substantially responsive will be checked by the MUNICIPAL CORPORATION BHOPAL for any arithmetical errors in computation and summation. Errors will be corrected by the MUNICIPAL CORPORATION BHOPAL as follows.

17.0 Award Criteria

MUNICIPAL CORPORATION BHOPAL will award the contract to the BIDDER whose TENDER has been determined to be substantially responsive to the TENDER documents and who has offered the best design & lowest Evaluated TENDER Price provided further that the BIDDER has the capability and resources to carry out the contract effectively. The methodology proposed, the equipments identified for this work, the technical capacity of the firm mentioned shall be examined.

The detailed design and drawing submitted by Contractor shall be examined by any recognized institute like Engineering College and the observations made by the examining institute shall be duly incorporated by Contractor without any claims what so ever in this regard.

18.0 Notification of Award

18.1 Prior to the expiration of the period of TENDER validity prescribed in this TENDER, MUNICIPAL CORPORATION BHOPAL shall notify the successful BIDDER by cable or telex to be confirmed in writing by registered letter that his TENDER has been accepted. This letter thereinafter and in the conditions of contract called Letter of Acceptance) shall named the sum which the MUNICIPAL CORPORATION BHOPAL will pay to the contractor in consideration of the execution, completion, operation, maintenance and guarantee of the works by the contractor as prescribed by the contract (hereinafter and in the conditions of contract called the contract price). No further correspondence will be entertained by the MUNICIPAL CORPORATION BHOPAL from the unsuccessful BIDDER.

18.2 The Letter of Acceptance will constitute the formation of a contract.

18.3 Upon the furnishing by the successful BIDDER of a "Performance Security" the MUNICIPAL. CORPORATION BHOPAL will promptly notify the unsuccessful BIDDER that their TENDERs have been unsuccessful and return their TENDER securities.

19. Signing of Agreement

19.1 Within 10 days of receipt of the letter of Acceptance successful BIDDER shall sign the contract Agreement.

19.2 Failing to execute the contract agreement within the said period may result in forfeiture of Earnest Money and disqualification.

20.0 Performance Security

20.1 Within 15 days of receipt of the letter of Acceptance from the MUNICIPAL CORPORATION BHOPAL the successful BIDDER shall furnish to the MUNICIPAL CORPORATION BHOPAL an initial performance Security for an amount of 5% (five percent) of the contract price.

a. A Demand Draft / Pay Order/FDR/Bank Guarantee Payable at Bhopal drawn in favour of Commissioner MUNICIPAL CORPORATION BHOPAL on any Indian nationalized Bank located in India.

20.2 On due performance and completion of the contract incl. Operation and Maintenance, in all respects the performance security will be returned to the successful BIDDER without any interest.

20.3 Failure of the successful BIDDER to furnish the performance security shall constitute sufficient grounds for the annulment of the award and forfeiture of the Earnest Money, in which event the TENDER may be awarded to the next lowest evaluated BIDDER.

20.4 On acceptance of the performance security by the MUNICIPAL CORPORATION BHOPAL, COMMISSIONER MUNICIPAL CORPORATION BHOPAL will issue a commencement order and hand over the possession of the work site to the contractor to start the work, in accordance with

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clause 41 of General Conditions of Contract. The date of issue of which, shall constitute the commencement of the contract period.

Bid Data Sheet

General

Particulars	Data	
Office of the	Commissioner Municipal Corporation Bhopal District Bhopal (M.P.)	
NIT No	/Bhopal /2014/	
Date	26/12/2014	
Tender document to be purchase online from date & time	From 29/12/2014 (10.30 am)	To 02/02/2015 (23:59)
Website link	https://www.mpeproc.gov.in/	

For Section 1 - NIT

Clause reference	Ref No	Particulars	Data
	(A)	Key dates	Page – 16
	(B)	Service Charges Rs. 610/-	
	(C)	Cost of Tender document online payment)	Rs. 50,000/-
	(D)	Cost of Tender document online payment to	Commissioner Municipal Corporation Bhopal District Bhopal (M.P.)
	(E)	EMD valid for a period of	not less than 180 days
	(F)	Affidavit	Annexure H
	(G)	Pre-qualifications required	YES
		If Yes, details	Annexure N
	(H)	Special Eligibility	NO
		If Yes, details	Annexure O (Not applicable)

For Section 2 - ITB

1.1	(I)	Name of work	
1.2	(J)	Technical Specifications	Annexure E
2	(K)	Procedure for participation in e-Tendering	Section 2 part A
J	(L)	Pre Bid Meeting	At 11:30 AM on 15th Jan 2015
		If Yes,	Applicable
11.2	(M)	Envelope-B Technical Proposal	Annexure I (I-1 to I-7)
11.3	(N)	Envelope-C Financial Tender	Annexure J
		Earnest Money Deposit	Rs. 25,15,000/-
		Earnest Money Deposit	Payable Online
15.1	[O]	Period of Validation of Tender	180 Days
25	(P)	Letter of Acceptance (LoA) and Contract agreement	Annexure K & L
26	(Q)	Amount of Performance Security	05 % of the Tender amount
	(R)	Performance security in the form of Bank Guarantee	Annexure F
	(S)	Performance security in favour of	Commissioner Municipal Corporation Bhopal District Bhopal (M.P.)
	(T)	Performance security valid up to	Three months or 90 days (whichever is more) from the last

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Project ... JNNURM (Water Distribution Project) Municipal Corporation, Bhopal

			date of defect liability period.

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JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

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Key Dates

Purchase of Tender Start Date:	29-12-2014 10:30	**Pre-Bid Meeting Date and Time:**	15-01-2015 11:00
Purchase of Tender End Date:	02-02-2015 23:59	**Bid Submission End Date:**	04-02-2015 17:30
Physical Submission End Date:	05-02-2015 14:00	**Mandatory Submission (Envelope A) Open Date:**	05-02-2015 15:30
Technical Proposal (Envelope B) Open Date:	05-02-2015 15:31	**Financial Bid (Envelope C) Open Date:**	12-02-2015 10:30

Note: Original term deposit receipt of earnest money deposit and affidavit shall be submitted by the bidder so as to reach the office as prescribed in NIT for e-Tenders by "Physical Submission End Date" mentioned above.

NOTE: THE ABOVE KEY DATES ARE INDICATIVE, URBAN LOCAL BODIES SHALL CHANGE THE KEY DATES AS PER THEIR REQUIREMENTS.

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Municipal Corporation, Bhopal

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Section-3
GENERAL CONDITIONS OF CONTRACT

DEFINITIONS AND INTERPRETATION

1.(I) In the Contract as hereinafter defined, the following words and expressions shall have the meaning hereby assigned to them, except where the context otherwise requires :

(a) "Employer" means the authority who will employ the Contractor and the legal successors in title to the Employer but not, except with consent of the Contractor, any assignee of the Employer.

(b) "Contractor" means the person or persons, firm or company whose TENDER has been accepted by the Employer and includes the Contractor's personal representatives, successors and permitted assignees.

(c) "Engineer" means the Engineer designated as such in Contract, the Engineer appointed from time to time by the Employer and notified in writing to the Contractor to act as Engineer for the purposes of the Contract in place of the Engineer so designated.

(d) "Engineers Representative" means any resident engineer or Executive of the engineer, or any clerk of works appointed from time to time by the Employer or the Engineer to perform the duties set forth in the Contract hereof, whose authority shall be notified in writing to the Contractor by the Engineer.

(e) "Works" shall include both permanent Works and Temporary Works.

(f) "Contract" means the Conditions of Contract Specifications, Drawings, Priced Bill of Quantities. Schedule of Rates and Prices. if any, TENDER, Letter of Acceptance and the Contract Agreement.

(g) "Contract Price" means the sum named in the Letter of Acceptance subject to such additions therefore or deductions there from as may be made under the provisions hereinafter contained.

(h) "Constructional Plant" means all appliances or things of whatsoever nature required in or about the execution or maintenance or the Works but does not include materials or other things intended to form or forming part of the Permanent Works.

(i) "Permanent Works" means the permanent works to be executed and maintained in accordance with the Contract.

(j) "Specification" means the specifications referred to in the TENDER and any modifications thereof or addition thereto as may from time to time be furnished or approved in writing by the Engineer.

(k) "Drawings" means the drawings referred to in the Specification and any modification of such drawings approved in writing by the Engineer and such other drawings as may from time to time be furnished to be approved in writing by the Engineer.

(l) "Site" means the land and other places on, under, in or through which the Permanent Works or Temporary Works designed by the Engineer are to be executed and any other lands and places provided by the Employer for working space or any other purpose as may be specifically designated in the Contract as forming part of the site.

(m) "Approved" means approved in writing including subsequent written confirmation of previous verbal approval and "approval" means approval in writing, including as aforesaid.

Singular and Plural

(n) Words importing the singular only also include the plural and vice versa where the context requires.

Heading or Notes

(o) The headings and marginal notes in these Conditions of Contract shall not be deemed to be part thereof or be taken into consideration in the interpretation or construction thereof or of the Contract.

Cost

(p) The Word "Cost" shall be deemed to include overhead costs whether on or off the Site.

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2.0 ENGINEER AND ENGINEER'S REPRESENTATIVE

Duties and Powers of Engineer and Engineer's Representative

2 (1) The Engineer shall carry out such duties in issuing decision, certificates and orders as are specified in the Contract. In the event of Engineer being required in terms of his appointment by the Employer to obtain the specific approval of the Employer for the execution of any part of these duties, this shall be set out in section 3 of Special Conditions of Contract.

2 (2) The Engineer's Representative shall be responsible to the Engineer and his duties are to watch and supervise the works and to test and examine any materials to be used or workmanship employed in connection with the works. He shall have no authority to relieve the Contractor of any of his duties or obligations under the Contract not except as expressly provided hereunder or elsewhere in the Contract, to order any work involving delay or any extra payment by the Employer, nor to make any variation of or in the works.

The Engineer may from time to time in writing delegate to the Engineer's Representative any of the powers and authorities vested in the Engineer and shall furnish to the Contractor and to the Employer a copy of all such written delegations of powers and authorities. Any written instruction or approval given by the Engineer's Representative to the Contractor within the terms of such delegation, but not otherwise, shall bind the Contractor and the Employer as though it had been given by the Engineer. Provided always as follows :-

(a) Failure of the Engineer's Representative to disapprove any work or materials shall not prejudice the power of the Engineer thereafter to disapprove such work or materials and to order the pulling down, removal or breaking up thereof.

(b) If the Contractor shall be dissatisfied by reason of any decision of the Engineer's Representative he shall be entitled to refer the matter to the Engineer, who shall thereupon confirm reverse or vary such decision.

ASSIGNMENT AND SUB-LETTING

(3) The Contractor shall not assign the Contract or any part thereof or any benefit or interest therein or there under otherwise than by a charge in favour of the Contractor's bankers of any monies due or to become due under this Contract.

(4) The Contractor shall not sub-let the whole of the works Except where otherwise provided by the Contract, The Contractor shall not sub-let any part of the Works Provided always that the provision of labour on a piece work basis shall not be deemed to be a sub-letting under this Clause.

CONTRACT DOCUMENTS

5.(1) Language's and law

(a) The language or languages in which the Contract documents shall be drawn up shall be English.

(b) The Country or State the law of which is to apply to the Contract and according to which the Contract is to be constructed, shall India & Madhya Pradesh.

Documents Mutually Explanatory

(2) Except if and to the extent otherwise provided by the Contract the provisions of the Conditions of Contract sections 2 and 3 shall prevail over those of any other document forming part of the Contract Subject to the foregoing the several documents forming the Contract are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies the same shall be explained and adjusted by the Engineer who shall thereupon issue to the Contractor Instructions thereon. Provided always that if in the opinion of the Engineer, compliance with any such instructions shall involve the Contractor in any cost, which by reason of any such ambiguity or discrepancy could not reasonable have been foreseen by the Contractor the Engineer shall certify and the Employer shall pay such additional sum as may be reasonable to cover such costs.

Custody of Drawings

6.(1) The Drawings shall remain in the sole custody of the Engineer, but two copies thereof shall be furnished to the Contractor free of charge. The Contractor shall provide and make at his own expense any further copies required by him. At the completion of the contract the Contractor shall return to the Engineer all Drawings provided under the Contract.

One copy of the Drawings to be kept on Site.

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(2) One copy of the Drawings furnished to the Contractor as aforesaid, shall be kept by the Contractor on the site and the same shall at all reasonable times be available for inspection and use by the Engineer and the Engineer's Representative and by any other person authorized by the Engineer in writing.

Disruption of Progress

(3) The Contractor shall give written notice to the Engineer whenever planning or progress of the works is likely to be delayed or disrupted unless any further drawing or order, including a direction, instruction or approval is issued by the Engineer within a reasonable time. The notice shall include details of the drawing or order required and of why and by when it is required and of any delay or disruption likely to be suffered if it is late.

Delay and Cost of delay of Drawings

(4) If, by reason of any failure or inability of the Engineer to issue within a time reasonable in all the circumstances any drawing or order required by the Contractor in accordance with sub-clause (3) of this Clause, the Contractor suffers delay then the Engineer shall take such delay into account in determining any extension of time to which the Contractor is entitled under Clause 44 hereof. However the Contractor shall not be entitled to any compensation for such delay, except extension of time.

Further Drawings and Instructions

7. The Engineer shall have full power and authority to supply to the Contractor from time to time during the progress of the Works such further drawings and instructions as shall be necessary for the purpose of the proper and adequate execution and maintenance of the Works The Contractor shall carry out and be bound by the same.

GENERAL OBLIGATIONS

Contractors general Responsibilities

8.(1) The Contractor shall subject to the provisions of the Contract and with due care and elegance, execute and maintain the works and provide all labour and material, including the supervision thereof. Constructional plant and all other things, whether of a temporary or permanent nature required in and for such execution and maintenance, so far as the necessity for providing the same is specified in or is reasonable to be inferred during the Contract.

(2) The Contractor shall take full responsibility for the adequacy stability and safety of all site operations and methods of construction provided that the Contractor shall not be responsible except as may be expressly provided in the Contract for the design or specification of the permanent works or for the design or specification of any Temporary Works prepared by the Engineer.

Contract Agreement

9. The Contractor shall when called upon so to do enter into and execute a Contract Agreement to be prepared and completed by Contractor, in the form annexed with such modification as may be necessary.

Performance Bond (Deleted)

10. ~~If required for the due performance of the Contract, the TENDER shall contain an undertaking by the Contractor to obtain, when required, a bond or guarantee of an insurance company or bank, or there approved securities to be jointly and severally bound with the Contractor to the Employer, in a sum not exceeding that stated in the letter of Acceptance for such bond or guarantee, the said insurance company or bank or securities and the terms of the said bond or guarantee shall be such as shall be approved by the Employer. The obtaining of such bond or guarantee or the provision of such sureties and the cost of the bond or guarantee to be so entered into shall be at the expense in all respects of the Contractor, unless the Contract otherwise provides.~~

Inspection of Site by the contractor / Third Party inspection:-

11. The Employer shall have made available to the Contractor with the TENDER documents data relevant to the works and the TENDER shall be deemed to have been based on such data, but the Contractor shall be responsible for his own interpretation thereof.

The Contractor shall also be deemed to have inspected and examined the site and its surroundings and information available in connection therewith and to have satisfied himself so as is practicable before submitting his TENDER, as to the form and nature thereof, including the climatic conditions, the extent and nature of work and materials necessary for the completion of the Works, the means of access to the Site and accommodation required and in general, shall be

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deemed to have obtained all necessary information, subject as above mentioned, as to risks, contingencies and all other circumstances which may influence of affect his TENDER. The TENDER as submitted by the Bidder is strictly as per his own assessment regarding site conditions and material, labour, T & P availability. No claims what so ever shall be entertained by the employer in this regard.

Sufficiency of TENDER

12. The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his TENDER for the Works and of the rates and prices of various Quantities and the Schedule of Rates and Prices, if any, which TENDER rates and prices shall, except in so for as it is otherwise provide in the Contract, cover all his obligations under the Contract and all matters and things necessary for the proper execution and maintenance of the Works. If, however, during the execution of the Works the Contractor shall encounter physical conditions, other than climatic conditions on the Site, or artificial obstructions, which conditions or obstruction could, in his opinion, not have been reasonable foreseen by an experienced contractor the Contractor shall forthwith give written notice thereof to the Engineer's Representative and if in the opinion of the Engineer, such conditions or artificial obstructions could not have been reasonably foreseen by an experienced contractor, than the Engineer shall certify and the Employer shall pay the additional cost to which the Contractor shall have been put by reason of such conditions, including the proper and reasonable cost. However the Engineers decision shall be final & binding.

Works to be done to the Satisfaction of the Engineer

13. Save insofar as it is legally or physically impossible the Contractor shall execute and maintain the works in strict accordance with the Contract to the satisfaction of the Engineer and shall comply with and adhere strictly to the Engineer's Instruction and directions on any matter whether mentioned in the Contract or not, touching or concerning the Works of the Contract and shall take instructions and directions only from the Engineer or subject to the limitations referred to in Clause-2 hereof from the Engineer's Representatives.

14 **Programme to be Furnished**

(1) Within the time stated in section-3 of the contract, the Contractor shall after the acceptance of his TENDER, submit to the Engineer for his approval a programme showing the order of procedure in which he proposes to carry out the works. The contractor shall whenever required by the Engineer or Engineer's Representative, also provide in writing for his information a general description of the arrangements and methods which the Contractor proposes to adopt for the execution of the works.

(2) If at any time it should appear to the Engineer that the actual progress of the works does not conform to the approved programme referred to in sub-clause (1) of this Clause, the Contractor shall produce, at the request of the Engineer, a revised programme showing the modifications to the approved programme necessary to ensure completion of the Works within the time for completion as defined in Clause 4.3 hereof.

(3) The submission to and approval by the Engineer or Engineer's Representative of such programmes or the furnishing of such particulars shall not relieve the contractor of any of his duties or responsibilities under the Contract.

15. **Contractor's Superintendence**

The Contractor shall give or provide all/necessary superintendence during the execution of the works and as long thereafter as the Engineer may consider necessary for the proper fulfilling of the Contractor's obligations under the Contract. The Contractor, or a competent and authorized agent or representative approved in writing by the Engineer, which approval may at any time be withdrawn, is to be constantly on the works and shall give his whole time to the superintendence of the same. If such approval shall be withdrawn by the Engineer, the Contractor shall, as soon as is practicable, having regard to the requirement of replacing him as hereinafter mentioned after receiving written again on the works in any capacity and shall replace him by another agent approved by the Engineer. Such authorized agent or representative shall receive instructions from the Engineer or subject to the limitations of Contract hereof, the Engineer's Representative.

16.0 Contractor's Employees

The contractor shall provide and employ on the site in connection with the execution and maintenance of the works.

(a) Only such technical Executives as are skilled and experience in their respective callings and such sub-agents, foremen and leading hands as are competent to give proper supervision to the work they are required to supervise and

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(b) Such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely execution and maintenance of the works.

17.0 Excepted Risks

The "excepted risks" as war, hostilities (whether war be declared or not), invasion act by foreign enemies, rebellion, revolution, insurrection of military, civil war, earthquakes and inundation by flash floods due to cyclones, storms or unless solely restricted to employees of the Contractor or of his sub contractors and arising form the conduct of the works, commotion or disorder or use of occupation by the Employer of any part of the permanent Works of a cause solely due to the Engineer's design of the works or ionising traditions or form any nuclear waste from the combustion of nuclear fuel radio-active foxier explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds of any such operation of the forces of nature as an experienced contractor could not foresee or reasonably make provision for or insure against all of which are herein collectively referred to as "the excepted risks"

18.0 Insurance on Works, etc.

Without limiting his obligations and responsibilities under this Contract hereof, the Contractor shall insure in the joint names of the Employer and the Contractor against all loss or damage from whatever clause arising other than the excepted risks for which he is responsible under the terms of the Contract and in such manner that the Employer and Contractor are covered for the period stipulated in Contract hereof and are also covered during the period of Maintenance for loss or damage arising from a cause, occurring prior to the commencement of the period of maintenance and for any loss or damage occasioned by the contractor in the cause of any operations carried out by him for the purpose of complying with his obligations under the relevant clause of this Contract:

(a) The works for the time being executed to the estimated current contract value thereof, or such additional sum as may be specified in the Special conditions of Contract together with the materials for incorporation in the works at their replacement value.

(b) The constructional Plant and other things brought on to the Site by the Contractor to the replacement value of such Constructional Plant and other things.

Such insurance shall be effected with an insurer and in terms approved by the Employer, which approval shall not be unreasonably withheld and the contractor shall whenever required produce to the Engineer or the Engineer's Representative the policy of insurance and the receipts for payment of the current premiums.

19.0 Damage to Persons and property

(1) The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of injuries of damage to any persons or material or physical damage to any property whatsoever which may arise out of or in consequence of the execution and maintenance of the works and against all claims, proceedings, damages, costs charges and expenses whatsoever in respect of or in relation thereto except any compensation or damages for or with respect to :-

(a) The permanent use of occupation of land by the works or any part thereof.

(b) The right of the Employer to execute the works or any part thereof on, over, under, in or through any land.

(c) Injuries or damage to persons or property which are the unavoidable result of execution or maintenance of the works in accordance with the Contract.

(d) Injuries or damage to persons or property resulting from any act or neglect of the Employer, his agents servants or other contractors, not being employed by the Contractor, or for or in respect of any claims, proceedings, damages, costs, charges and expenses in respect thereof or in relation thereto or where the injury of damage was contributed to by the Contractor, his servants or agents such part of the compensation as may be just and equitable having regard to the extent of the responsibility of the Employer, his servant or agents or other contractors for the damage or injury

(2) **Indemnify by Employer**

The Employer shall indemnify the Contractor against all claims, proceedings, damages, costs, charges and expenses in respect of the matters referred to in the provision to sub-clause (1) of this clause.

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20.0 Third party Insurance

(1) Before commencing the execution of the Works the contractor, but without limiting his obligations and responsibilities under Clause-19 hereof, shall insure against his liability for any material or physical damage, loss or injury which may occur to any property, including that of the Employer, or to any person, including any employee of the Employer by or arising out of the execution of the works or in the carrying out of the Contract, otherwise than due to the matters referred to in the provision to Clause-19 (1) hereof

(2) **Minimum amount of Third party Insurance**

Such Insurance shall be effected with an insurer and in terms approved by the Employer which approval shall not be unreasonably with held, and for at least the amount stated, in the Appendix to the TENDER. The Contractor shall, whenever required, produce to the Engineer or the Engineer's Representative the policy or policies of Insurance and the receipts for payment of the current premiums. The Contractor shall submit certified copies of the premiums paid to the Engineer regularly Failure to do so shall invite action under provision of clause 22 hereof.

(3) **Provision to Indemnify Employer**

The terms shall include a provision whereby in the event of any claim in respect of which the Contractor would be entitled to receive claim under the policy being brought or made against the Employer, the insurer will indemnify the Employer against such claims and any cost, charges and expenses in respect thereof.

21.0 Accident or Injury to Workmen

(1) The Employer shall not liable for or in respect of any damages or compensation payable as per law in respect or in consequence of any accident or injury to any workman or other person in the employment of the Contractor or any sub-contractor, save and except an accident or injury resulting from any act or default of the Employer his agents or servants. The Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation, save and except as aforesaid, and against all claims proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

(2) **Insurance against Accidents, etc., to Workman**

The Contractor shall insure against such liability with an insurer approved by the Employer, which approval shall not be unreasonably with held, and shall continue such insurance during the whole of the time that any persons are employed by him on the Works and shall, when required produce to the Engineer or the Engineer's Representative such policy of insurance and the receipt for payment of the current premium. Provided always that in respect of any persons employed by any sub-contractor the Contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the sub contractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy but the contractor shall require such sub contractor to produce to the Engineer or the Engineer's Representative when required such policy of insurance and the receipt for the payment of the current premium.

22.0 Remedy on contractor's Failure to Insure

(1) If the Contractor shall fail to effect and keep in force the insurances referred to clause hereof or any other insurance which he may be required to effect under the terms of the contract then and in any such case the Employer may effect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and from time to time and deduct the amounts paid by the Employer as aforesaid from any monies due or which may become due to the Contractor, or recover the same as a debt due from the Contractor.

(2) The Contractor shall give all notices and pay all fees required to be given or paid by any National or State Statue ordinance, or other Law, or any regulation or bye law of any local or other duly constituted authority in relation to the execution of the works and by the rules and regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the works.

23.0 Compliance with Statutes, Regulations, etc.

(1) The Contractor shall confirm in all respects with the provisions of any such Statue ordinance or Law as aforesaid and the regulations or bye laws of any local or other duly constituted authority which may be applicable to the works and with such rules and regulations of public bodies and companies as aforesaid and shall keep the Employer indemnified against all penalties and liability of every kind for breach of any such statue Ordinance or law, regulation or bye law.

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(2) The Employer will repay or allow to the contractor all such sums as the Engineer shall certify to have been properly payable and paid by the Contractor in respect of such fees.

24.0 Fossils, etc.

All fossils, coins, articles of value of antiquity and structures and other remains or things of geological or archeological interest discovered on the site of the works shall as between the Employer and the Contractor be deemed to be the absolute property of the Employer. The Contractor shall take reasonable precautions to prevent his workmen or any other persons from removing or damaging any such article or things and shall immediately upon discovery thereof and, before removal acquaint the Engineer's Representative of such discovery and carry out at the expense of the Employer. the Engineer's Representative's orders as to the disposal of the same.

25.0 Patent Right and Royalties

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

26.0 Interference with traffic and Adjoining Properties

All operations necessary for the execution of the works shall so far as compliance with the requirements of the contract permits be carried on so as not to interfere unnecessarily or improperly with the convenience of the public or the access to use and occupation of public or private roads and footpaths to or of properties whether in the possession of the employer or of any other person. The Contractor shall save harmless and indemnify the Employer in respect of all claims, proceedings damages, costs, charges and expenses whatsoever arising out of or in relation to any such matters in so far as the Contractor is responsible therefore.

27.0 Extraordinary Traffic

The Contractor shall use every reasonable means to prevent any of the highways or bridges communicating with or on the routes to the Site from being damaged or injured by any traffic of the Contractor or any of his sub contractors and in particular shall select routes choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic as will inevitably arise from the moving of plant and material from and to the Site shall be limited, as far as reasonably possible, and so that no unnecessary damage or injury may be occasioned to such highways and bridges.

28.0 Special Loads

Should it be found necessary for the Contractor to move one or more loads or Constructional Plant, machinery of pre-constructed units or parts of units or work over part of a highway or bridge, the moving whereof is likely to damage any highway or bridge unless special protection or strengthening is carried out, the Contractor shall before moving the load on to such highway or bridge give notice to the Engineer or Engineer's Representative of the weight and other particulars of the load to be moved and his proposals for protecting or strengthening the said highway or bridge. Unless within fourteen days of the receipt of such notice and Engineer shall by counter notice direct that such protection or strengthening is necessary then the Contractor will carry out such proposals or any modification thereof that the Engineer shall require and unless there is an item or are items in the Bill of Quantities for pricing by the Contractor of the necessary works for the protection or strengthening aforesaid the costs thereof shall be paid by the Employer to the Contractor.

29.0 Settlement of Extraordinary Traffic Claims

If during the execution of the works or at any time there after the Contractor shall receive any claim arising out of the execution of the works in respect of damage or injury to highways or bridges he shall immediately report the same to the Engineer and thereafter the Employer shall negotiate the settlement of all sums due in respect of such claim if and so far as any such claims or part thereof shall in the opinion of the Engineer be due to any failure on the part of the Contractor to observe and perform his obligations under sub clause (1) and (2) of this Clause then the amount certified by the Engineer to be due to such failure shall be paid by the Contractor to the Employer.

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30.0 Waterborne Traffic

Where the nature of the works is such as to require the use by the Contractor of water-borne transport the foregoing provisions of this Clause shall be construed as though "highway" included a lock, dock, sea wall or other structure related to a waterway and "vehicle" included craft and shall have effect accordingly.

31.0 Opportunities for other Contractors

The Contractor shall, in accordance with the requirements of the Engineer, afford all reasonable opportunities for carrying out their work to any other contractors employed by the Employer and their workmen and to the workmen of the Employer and of any other duly constituted authorities who may be employed in the execution on or mean the Site of any work not included in the Contract or of any contract which the Employer may enter into in connection with or ancillary to the works. If however, the Contractor shall, on the written request of the Engineer or the Engineer's Representative, make available to any such other contractor, or to the Employer or any such authority, any roads or ways for the maintenance of which the Contractor is responsible or permit the use by any such f the Contractor's scaffolding or other plant on the Site or provide any other service of whatsoever nature for any such, in the opinion of the Engineer be reasonable.

32.0 Contractor to keep Site Clear

During the progress of the works the Contractor shall keep the Site reasonably free from all unnecessary obstruction and shall store or dispose of any Constructional Plant and surplus materials and clear away and remove from the Site and wreckage, rubbish or Temporary works no longer required.

33.0 Clearance of Site on Completion

On the completion of the Works the Contractor shall clear away and remove from the Site all Constructional Plant, Surplus materials, rubbish and Temporary Works of every kind and leave the whole of the Site and Works clear and in a working like condition to the satisfaction of the Engineer.

LABOUR

Model rules relating to Labour, camps please see Annexure 'A'.

34.0 Engagement of Labour

(1) The Contractor shall make his own arrangements for the engagement of all labour, local or otherwise, and save insofar as the Contract otherwise provides, for the transport, housing, feeding and payment thereof.

Supply of Water

(2) The Contractor shall, so far as reasonably practicable having regard to local conditions, provide on the Site, to the satisfaction of the Engineer's Representative an adequate supply of drinking and other water for the use of the Contractor's staff and work people

Alcoholic Liquor or Drugs

(3) The Contractor shall not, otherwise than in accordance with the Statutes, Ordinance and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor, or drugs or permit or suffer any such importation sale, gift, barter or disposal by his sub-contractors, agents or employees.

Arms and Ammunition

(4) The Contractor shall not give, barter or otherwise dispose of to any person or persons, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

Festivals and Religious Customs

(5) The Contractor shall in all dealings with labour in his employment have due regard to all recognized festivals, days of rest and religious or other customs.

Epidemics

(6) In the event of any outbreak of illness of an epidemics nature the Contractor shall comply with and carry out such regulations orders and requirements as may be made by the Government or the local medical or sanitary authorities for the purpose of dealing with and overcoming the same.

Disorderly Conduct etc.

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(7) The contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his employees and for the preservation of peace and protection of persons and property in the neighborhood of the Works against the same.

(8) The Contractor shall be responsible for observance by his sub-contractors of the foregoing provisions

Compliance to Labour laws & Regulations

(9) The Contractor shall comply with all Labour laws and Government regulations applicable at the site of work and shall indemnify the Government in respect of all claims arising out of non-compliance thereof by the Contractor.

35.0 Returns of Labour, etc.

The contractor shall deliver to the Engineer's Representative, or at his office a return in detail in such front and at such intervals as the Engineer may prescribe showing the supervisory staff and the numbers of the several classes of labour from time to time employed by the contractor on the Site and such information respecting Constructional Plant as the Engineer's Representative may require.

36.0 MATERIALS AND WORKMANSHIP

Quality of Materials and Workmanship and Tests

(1) All materials and workmanship shall be of the respective kinds and in accordance with the respective codes and standards as described in the Contract and in accordance with the Engineer's instructions and shall be subjected from time to time to such tests as the Engineer may direct at the place of manufacture or fabrication or on the Site or at such other place or places as may be specified in the Contract, or at all or any of such places. The Contractor shall provide such assistance, instruments, machines, labour and materials as are normally required for examining measuring and testing any work and the quality, weight or quantity of any materials used and shall supply samples or materials before in advance in the Works for testing as may be selected and required by the Engineer.

(2) Cost of Tests not provided for except for the following, if any test is ordered by the Engineer which is either:

a) not so intended by or provided for, or

b) (in the cases above mentioned) is not so particularized or

c) though so intended or provided for is ordered by the Engineer to be carried out by an independent person at any place other than the site or the place of manufacture or fabrication of the materials tested.

Then the cost of such test shall be borne by the Contractor if the test shows the workmanship or materials not to be in accordance with the provisions but otherwise by the Employer.

37.0 Inspection of Operations

The Engineer and any person authorised by him shall at all times have access to the Works and to all Workmanship's and places where work is being prepared or from where materials, manufactured articles of machinery are being obtained for the Works and the Contractor shall afford every facility for and every assistance in or in obtaining the right to such access.

MUNICIPAL CORPORATION BHOPAL shall nominate a third party inspection agency like RITES. The expenses of third party inspection shall be borne by Contractor.

Examination of Work before Covering up

(1) No work shall be covered up or put out of view without the approval of the Engineer or the Engineer's Representative and the Contractor shall afford full opportunity for the Engineer or the Engineer's Representative to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. The work/foundations is or are ready or about to be ready for examination and the Engineer's Representatives shall, without unreasonable delay, unless he considers it unnecessary and advises the Contractor accordingly, attend for the purpose of examining and measuring such work or of examining such foundations.

Uncovering and Making Openings.

(2) The Contractor shall uncover any part or parts of the Works or make openings in or through the same as the Engineer may from time to time direct and shall reinstate and make good such part of parts to the satisfaction of the Engineer. If any such part or parts have been covered up or put out

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of view after compliance with the requirement of sub clause (1) of this Clause and are found to be executed in accordance with the Contract, the expense of uncovering making openings in or through reinstating and making good the same shall be borne by the Employer, but in any other case all costs shall be borne by the Contractor.

38.0 Removal of Improper Works and Materials.

(1) The Engineer shall during the progress of the Works have power to order in writing from time to time.

(a) the removal from the Site, within such time or times as may be specified in the order, of any materials/equipments which in the opinion of the Engineer are not in accordance with the contract.

(b) the substitution of proper and suitable material/equipments and

(c) the removal and proper re-execution not withstanding any previous feas or interim payment thereof of any work which in respect of materials or workmanship is not in the opinion of the Engineer in accordance with the Contract.

Default of Contractor in Compliance

(2) In case of default on the part of the Contractor in carrying out such order the Employer shall be entitled to employ and pay other persons to carry out the same and all expense consequent thereon or incidental thereto shall be recoverable form the Contractor by the Employer, of may be deducted by the Employer from the monies due or which may become due to the Contractor.

39.0 Suspension of Work

(1) The Contractor shall, on the written order of the Engineer, suspend the progress of the works or any part thereof for such time or times and in such manner as the Engineer may consider necessary and shall during such suspension properly protect and secure the work, so far as is necessary in the opinion of the Engineer. The extra cost incurred by the Contractor in giving effect to the Engineer's instructions under this Clause shall be borne and paid by the Employer unless such suspension is:

(a) otherwise provided for in the contract, or

(b) necessary by reason of some default on the part of the Contract

(c) necessary by reason of climatic conditions on the Site, or

(d) necessary for the proper execution of the works or for the safety of the works or any part thereof in so far as such necessity does not arise from any act or default by the Engineer or the Employer or from any of the excepted risks defined in Clause 20 hereof. Provided that the Contractor shall not be entitled to recover any such extra cost unless he gives written notice of his intention to claim to the Engineer within Twenty eight days of the Engineer's order. The Engineer shall settle and determine such extra payment and/or extension of time under Clause 41 before to be made to the Contractor in respect of such claim as shall, in the opinion of the Engineer be far and reasonable.

Suspension Lasting more than 90 days

(2) If the progress of the work or any part thereof is suspended on the written order of the Engineer and if permission to resume work is not given by the Engineer within a period of ninety days from the date of suspension then, unless such suspension is within paragraph (a), (b), (c) or (d) or the sub-clause (1) of this Clause, the Contractor may serve a written notice on the Engineer requiring permission within twenty-eight days from the receipt thereof to proceed with the works, or that part thereof to proceed with the works, or that part thereof in regard to which progress is suspended and, if such permission is not granted within that time the Contractor by a further written notice so served may, but is not bound to, elect or treat the suspension where it affects part only of the Works as an omission of such part under clause 51 hereof or where it affects the whole Works, as an abandonment of the Contract by the Employer.

40.0 COMMENCEMENT TIME AND DELAYS.

Commencement of Works

The Contractor shall commence the Works on Site within the period named in the TENDER after the receipt by him of a written order to this effect from the Engineer and shall proceed with the same with due expedition and without delay except as may be expressly sanctioned or ordered by the Engineer, or by wholly beyond the Contractor's control.

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41.0 Possession of Site

(1) Save in so far as the Contract may prescribe, the extent of portions of the Site of which the Contractor is to be given possession from time to time and the order in which such portions shall be made available to him and subject to any requirement in the Contract as to the order in which the Works shall be executed, the Employer will with the Engineer's written order to commence the Works, give to the Contractor possession of so much of the Site as may be required to enable the Contractor to commence and proceed with the programme referred to in Clause 14 hereof if any, and otherwise in accordance with such reasonable proposals of the Contractor as he shall by written notice to the Engineer, make and will, from time to time as the Works proceed, give to the Contractor of such further portions of the Site as may be required to enable the Contractor to proceed with the execution of the Works with due dispatch in accordance with the said programme or proposals, as the case may be. If the Contractor suffers delay or incurs cost from failure on the part of the Employer to give possession in accordance with the terms of this Clause, the Engineer shall grant an extension of time for the completion of the Works and no claim on this account shall be entertained.

42.0 Time for Completion

Subject to any requirement in the Contract as to completion of any section of the Works before completion of the whole of the Works shall be completed, in accordance with the provisions of Clause 48 hereof within the time stated in the Contract calculated from the last day of the period named in the Appendix to the TENDER as that within which the Works are to be commenced or such extended time as may be allowed under clause 44 hereof.

43.0 Extension of Time

If the Contractor shall desire an extension of time for completion of the work on the grounds of his having been unavoidably hindered in its execution or any other ground he shall apply in writing to the Divisional Officer/Sub-Divisional Officer within 30 days of the date of hindrance on account of which he desires such extension as aforesaid and the Divisional Officer/Sub-Divisional Officer, with whom he has signed the Agreement shall if in his opinion (which shall be final) reasonable grounds are shown therefore, may authorize such extension for a period not exceeding 3 months. Any further extension shall be subject to prior sanction of the Commissioner MUNICIPAL CORPORATION BHOPAL provided always where the Divisional Officer/Sub-Divisional Officer has recommended the grant of the extension/permitted the contractor to carry out the work reserving the right of the Department to impose the liquidated damages (as provided for under the agreement) the running bills shall continue to be paid to him.

Provided further if any extension applied for is proposed to be refused, the competent authority shallgive the contractor an opportunity to heard before taking final decision.

44.0 No Night or Sunday Work

Subject to any provision to the contrary contained in the Contract none of the permanent Works shall, save as hereinafter provided be carried on during the night or on Sundays, if locally recognized as days of rest or their locally recognized equivalent without the permission in writing of the Engineer's Representative, except when the work is unavoidable or absolutely necessary for the saving of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer's Representative. Provided always that the provision of this Clause shall not be applicable in the case of any work for which it is customary to carry out by rotary or double shifts.

45.0 Rates of Progress

If for any reason, which does not entitle the Contractor to any extension of time, the rate of progress of the Works or any section is at any time, in the opinion of the Engineer, too slow to ensure completion by the prescribed time or extended time for completion the Engineer shall so notify the Contractor in writing and the Contractor shall thereupon take such steps as are necessary and the Engineer may approve to expedite progress so as to complete the Works or such section by the prescribed time or extended time. The Contractor shall not be entitled to any additional payment for taking such steps. If as a result of any notice given by the Engineer under this Clause, the Contractor shall seek the Engineer's permission to do any work at night or on Sundays. If locally recognized as days of rest of their locally recognized equivalent such permission shall not be unreasonably refused.

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46.0 Compensation for Delay

The time allowed for the carrying out the work, as entered in the TENDER form shall be strictly observed by the contractor and shall be deemed to be essence of the contract and shall be reckoned from the fifteenth day after the date on which the order to commence the work issued to the contractor, for a work where completion is beyond 6 months.

For works, for which the completion period is up to six months:

The period will be reckoned immediately from the date of issue of the order to commence the work issued to the contractor. The work shall throughout the stipulated period of contract be proceeded with all due diligence keeping in view that time is the essence of the contract. The contractor shall be bound in all cases, in which the time allowed for any work exceeds one month to complete 1/8th of the whole work before 1/4th of the whole time allowed under the contract has elapsed, 3/8th of the work before 1/2 of such time has elapsed and 3/4th of the work before 3/4 of such time has elapsed. In the event of the contractor failing to comply with the above conditions, the Engineer shall levy on the contractor, a compensation of amount equal to:

1. 1/8 percent of the value of work per week in respect of work costing above Rs. 10,00,000 and up to Rs. 25,00,000.
2. 1/16 percent of the value of work per week in respect of work costing Rs. 25,00,000 and above.

The total amount of compensation under the provision of the clause shall be limited to 5 percent of the estimated value of whole work & liquidated damages for each default and not by way of penalty and the sum of Rs. 20000 per day for every complete day of such default.

The delay in departmental assistance in completing the contract will be taken duly in to account while recovering any compensation for the delay as prescribed above. Where the Engineer-in-Charge decides that the contractor is liable to pay compensation for not giving proportionate progress under this clause and the compensation is recommended during the intermediate period such compensation shall be kept in deposit and shall be refunded if the contractor subsequently makes up the progress for the lost time, within the period of contract including extension granted, if any.

47.0 Certification of Completion of Works.

(1) When the whole of the Works have been substantially completed and have satisfactorily passed any final test that may be prescribed in the Contract the Contractor may give a notice to this effect to the Engineer or to the Engineer's Representative accompanied by an undertaking to finish any outstanding work during the Period of Maintenance. Such notice and undertaking shall be in writing and shall be deemed to be a request by the Contractor for the Engineer to issue a certificate of Completion in respect of the Works. The Engineer shall within twenty one days of the date of delivery of such notice either issue to the Contractor, with a copy to the Employer, a Certificate of Completion stating the date on which in his opinion, the works were substantially completed in accordance with the Contract or give instructions in writing to the Contractor specifying all the work which, in the Engineer's opinion requires to be done by the Contractor before the issue of such certificate. The Engineer shall also notify the Contractor of any defects in the Works affecting substantial completion that may appear after such instructions and before completion of the works specified therein. The Contractor shall be entitled to receive such Certificate of Completion within twenty one days of completion to the satisfaction of the Engineer of the works so specified and making good any defects so notified.

Certification of Completion of stages

(2) Similarly in accordance with the procedure set out in sub clause (1) of this Clause the Contractor may request and the Engineer shall issue a Certificate of completion in respect of

(a) any section of the Permanent Works in respect of which a separate time for completion is provided in the Contract and

(b) any substantial part of the Permanent Works which has been both completed to the satisfaction of the Engineer and occupied or used by the Employer.

(3) If any part of the Permanent Works shall have been substantially completed and shall have satisfactorily passed any final test that may be prescribed by the Contract, the Engineer may issue

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a Certificate of Completion in respect of that part of the Permanent works before completion of the whole of the works and upon the issue of such Certificate, the Contractor shall be deemed to leave undertaken to complete any outstanding work in that part of the works during the period of Maintenance.

(4) Provided always that a Certificate of Completion given in respect of any section or part of the Permanent Works before completion of the whole shall not be deemed to certify completion of any ground or surfaces requiring re-installment unless such Certificate shall expressly so state.

48.0 MAINTENANCE AND DEFECTS

Definition of Period of Maintenance

(1) In these conditions and expression "Period of Maintenance" shall mean the period of maintenance named in the Appendix to the TENDER, calculated from the date of completion of the works certified by the Engineer in accordance with Clause 48 hereof or in the event of more than one certificates having been issued by the Engineer under the said Clause from the respective dates so certified and in relations to the period of maintenance the expression the " works" shall be constructed accordingly.

Execution of Work of Repair etc.

(2) To the extent that the works shall at or as soon as practicable after the expiration of the period of Maintenance be delivered to the Employer in the condition required by the Contract. For wear and tear excepted to the satisfaction of the Engineer the Contractor shall finish the work, if any, outstanding at the date of completion as certified under Clause 45 hereof as soon as practicable after such date and shall execute all such work of repair, amendment, reconstruction, rectification and making good defects, imperfections shrinkages or other faults as may be required of the Contractor in writing by the Engineer during the period of maintenance or within fourteen days after its expiration as a result of an inspection made by or on behalf of the Engineer prior to its expiration.

Cost of Execution of work of Repair etc.

(3) All such work shall be carried out by the Contractor at his own expense if the necessity thereof shall in the opinion of the Engineer be due to the use of materials of workmanship not in accordance with the Contract or to neglect or failure on the part of the Contractor to comply with any obligation expressed or implied on the Contractor's part under the contract. If in the opinion of the Engineer such necessity shall be due to any other cause the value of such necessity shall be due to any other cause the value of such work shall be ascertained and paid for as if they were additional work.

Remedy on Contractors Failure to Carryout Work Required.

(4) If the Contractor shall fail to do any such work as aforesaid required by the Engineer then the Engineer shall employ and pay other persons to carry out the same and if such work is work which in the opinion of the Engineer the Contractor was liable to do at his own expenses under the Contract then all expenses consequent thereon or incidental thereto shall be recoverable from the Contractor by the Employer or may be deducted by the Employer from any monies due or which may become due to the Contractor.

49.0 Contractor to Search the defects

The Contractor shall if required by the Engineer in writing search under the directions of the Engineer for the cause of any defect imperfection or fault appearing during the progress of the works or in the period of maintenance if such defect imperfection or fault shall be one for which the Contractor is liable under the Contract the cost of the work carried out by the Contractor in searching as aforesaid shall be borne by the Contractor and he shall in such case repair rectify and make good such defect imperfection or fault at his own expense in accordance with the provisions of Clause 49 hereof.

50.0 ALTERATIONS, ADDITIONS AND COMMISSIONS

Variations

(1) The Engineer shall make any variation in writing of the form of quality or quantity of the works or any part thereof that may, in his opinion be necessary and for that purpose or it for any other reason it shall in his opinion be desirable he shall have power to order the Contractor to do and the Contractor shall do any of the following.

(a) Increase on decrease the quantity of any work included in the Contract.

(b) omit any such work.

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(c) change the character or quality or kind of any such work

(d) change the levels, lines, position and dimensions of any part of the works, and

(e) execute additional work of any kind necessary for the completion of the work and no such variation shall in any way vitiate or invalidate the contract but the value, if any of all such variations shall be taken into account in ascertaining the amount of the Contract Price.

Orders for Variations to be in Writing.

(2) No such variations shall be made by the contractor without an order in writing of the Engineer provided that no order in writing shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an order given under this Clause but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities. Provided also that if for any reason the Engineer shall consider it desirable to give any such order verbally, the contractor shall comply with such order and any confirmation in writing of such verbal order given by the Engineer whether before or after the carrying out of the order shall be deemed to be an order in writing within the meaning of this Clause. Provided further that if the Contractor shall within seven days confirm in writing to the Engineer and if such confirmation shall not be contradicted in writing within fourteen days by the Engineer it shall be deemed to be an order in writing by the Engineer.

51.0 Valuation of Variations.

(1) Except as mentioned in this TENDER all extra or additional work done or work omitted by order of the Engineer shall be valued at the rates and prices set out in relevant latest SOR of MP UADD without any escalation. If the SOR does not contain any rates on prices applicable to the extra or additional work then suitable rates or prices shall be agreed upon between the Engineer, Contractor and approved by the competent authority. In the event of disagreement, the MUNICIPAL CORPORATION BHOPAL shall fix such rates or prices as shall in their opinion be reasonable and proper and shall be final & binding. The quantum of such work shall not be more than 10% of the agreement amount.

Claims

(2) The Contractor shall send to the Engineer's Representative once in every month an account giving particulars as full and detailed as possible of all claims for any additional payment to which the Contractor may consider himself entitled and of all extra or additional work ordered by the Engineer which he has executed during the preceding month.

No final or interim claim for payment for any such work or expense will be considered which has not been included in such particulars. Provided always that the Engineer shall be entitled to authorise payment to be made for any such work or expense not with standing the Contractor's failure to comply with this condition if the Contractor has at the earliest practicable opportunity notified the Engineer in writing that he intends to make a claim for such work.

52.0 PLANT, TEMPORARY WORKS AND MATERIALS

Plant, etc., Exclusive Use for the Works

(1) All Constructional Plant, Temporary Works and materials provided by the contractor shall, when brought on to the Site, be deemed to be exclusively intended for the execution of the works and the Contractor shall not remove the same or any part thereof except for the purpose of moving it from one part of the Site to another without the consent in writing of the Engineer which shall not be unreasonably withheld.

Removal of Plant etc.

(1) Upon completion of the works the Contractor shall remove from the site all the said constructional plant and Temporary Works remaining there of and any unused materials provided by the Contractor of his own expenses.

Employer not liable for Damage to Plant etc.

(1) the Employer shall not at any time be liable for loss or damages to any of the said Constructional Plant, Temporary works or materials save as mentioned in Clause 17 and 62 hereof.

53.0 Environmental Conditions :

(1) The contractor shall take all necessary measures and precautions and otherwise ensure that the execution of the works and all associated operations on site or off-site are carried out in conformity with statutory and regulatory environmental requirements including those prescribed elsewhere in this document.

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(2) The contractor shall take all the measure 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. The provision of this sub clause shall however be disregarded in respect of emergency work required for saving life or property or the safety of the works.

(3) In the event of any soil or debris or silts from the sites being deposited on any adjacent land, the contractor shall immediately remove all such soils, debris or silt and restore the affected area to its original state.

54.0 Fuel and Chemical Storage :

(1) All fuel and chemical storage shall be sited on an impervious base within an embanked area and secured by fencing. The storage area shall be located away from any water course or wetland. The base and walls of the embankment shall be impermeable and of sufficient capacity to contain 110% of the volume of tanks. Filling and refueling shall be strictly controlled and subjected to format orders procedures.

(2) All valves and trigger guns shall be resistant to unauthorized interference and vandalism and be turned off and securely locked when not in use.

(3) The contents of any tank of drum shall be clearly marked.

(4) Measures shall be taken to ensure that no contamination happens or discharges enter any drain or water courses.

55.0 Earthworks:

Surplus excavation materials and topsoil shall, wherever possible be used to reinstate quarries or borrow pits or other areas s may be approved by the Engineer-in-Charge. Such material should be spread in such a manner as to limit subsequent erosion and shall be re-vegetated as existing ground cover dictates.

56.0 Environmental Enhancement:

(1) On completion of the works, the contractor shall reinstate all areas with natural vegetation which was disturbed during the course of work, to its original position to the satisfaction of the Engineer-in-Charge.

(2) The contractor shall remove all old tyres and internal tubes from within the limits of site and subject to the agreement of adjacent land owners from an additional area of 75 mtr. either side of the road center line. The contractor shall dispose off all materials in a manner approved by the Engineer-in-Charge.

(3) Where directed by the Engineer-in-Charge the contractor shall improve and reinstate the land on which informant road side service areas have been established by removing all debris and contaminated soil regarding to natural ground levels and reestablishing the natural vegetation where appropriate. All debris and contaminated materials shall be disposed off from site as approved by the Engineer-in-Charge.

57.0 MEASUREMENT

(1) **Quantities**

The quantities indicated in TENDER are estimated quantities and shall not be treated as final quantities to be executed by Contractor for the fulfillment of his obligation under this contract. However, the Contractor shall submit a detailed bill of quantities based on the detailed design and drawings which will be the estimated quantities of the work, based on which Billing breakup and milestone for payment shall be decided by Engineer In Charge.

(2) **Works to be Measured**

The Engineer shall, except as otherwise stated, ascertain and determine by measurement the quantum of work carried out and as per approved billing breakup the value in the terms of the Contract. He shall when he require any part or parts of the Work to be measured, give notice to the Contractor's authorized agent or representative, who shall forthwith attend or send a qualified agent to assist the Engineer or the Engineer's Representative in making such measurement and shall furnish all particulars required by either of them. Should the Contractor not attend or neglect or omit to send such agent, then the measurement made by the Engineer or approved by him shall be taken to be the correct measurement of the work. For the purpose of measuring such permanent work as is to be measured by records and drawings, the Engineer's Representative shall prepare records and drawings month by month of such work and the Contractor as and when called upon to do so in writing shall within fourteen days, attend to examine and agree such

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records and drawings with the Engineer's Representative and shall sign the same when so agreed. If the Contractor does not so attend to examine and agree such records and drawings, these shall be taken to be correct unless the Contractor shall, within fourteen days of such examination, lodge with the engineer's Representative for decision by the Engineer notice in writing of the respects in which such records and drawings are claimed by him to be incorrect.

(3) **Method of Measurement**

The work shall be measured, notwithstanding any general on local custom except where otherwise specifically described or prescribed in the Contract.

58.0 PROVISIONAL SUMS

Definition of "Provisional Sums"

(1) Provisional Sums" means a sum so designated in the Bill of Quantities for the execution of the work or the supply of goods, material or services or for contingencies, which sum may be used in whole or in part or not at all, at the direction and discretion of the Engineer. The Contract Price shall include only such amounts in respect of the work, supply or services to which such Provisional Sums relate as the Engineer shall approve or determine in accordance with this Clause.

Use of Provisional Sums

(2) In respect of every Provisional Sum the Engineer shall have power to order.

(a) Work to be executed including goods, materials or services to be supplied by the Contractor. The Contract price shall include the value of such work executed or such goods materials or services supplied determined in accordance with Clause 52. hereof.

(b) Work to be executed or goods materials or services to be supplied by the nominated Sub-Contractor as hereinafter defined. The Sum to be paid to the Contractor therefor shall be determined and paid in accordance with Clause 59 (4) hereof.

(c) Goods and materials to be purchased by the Contractor. The Sum to be paid to the Contractor thereof shall be determined and paid in accordance with Clause 59(4) hereof.

Production of Vouchers, etc.

(3) The Contractor shall, when required by the Engineer produce all quotations invoices vouchers and accounts or receipts in connection with expenditure in respect of Provisional Sums.

59.0 NOMINATED SUB-CONTRACTORS

(1) **Definition of "Nominated Sub-Contractors"**

All specialists, merchants, tradesman and others executing any work or supplying any goods, materials or services for which Provisional Sums are included in the Contract, who may have been or be nominated or selected or approved by the Employer or the Engineer and all persons to whom by value of the provisions of the Contract the Contractor is required to sub let any work shall in the execution of such work or the supply of such goods materials or services be deemed to be sub contractors employed by the contractor and are referred to in this Contract as "nominated Sub-Contractors".

(2) **Nominated Sub-Contractors, Objection to Nomination.**

The Contractor shall not be required by the Employer or the Engineer or to be deemed to be under any obligation to employ any nominated Sub-Contractor against whom the Contractor may raise reasonable objection or who shall decline to enter into a Sub-Contract with the Contractor containing Provisions.

(a) That in respect of the work goods, materials or services the subject of the sub-contract, the nominated Sub-Contractor will undertake forwards the Contractor the like obligations and liabilities as are imposed on the Contractor towards the Employer by the terms of the Contract and will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damages cost, charges and expenses whatsoever arising out of or in connection therewith or arising out of or in connection with any failure to perform such obligations on to fulfil such liabilities, and

(b) that the nominated Sub-Contractor will save harmless and indemnify the Contractor from and against any negligence by the nominated Sub-Contractor, his agents, workmen and servants and from and against any misuse by him or them of any Constructional Plant or Temporary works provided by the Contractor for the purpose of the Contract and from all claims as aforesaid.

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(3) **Design Requirements to be Expressly Stated**

If in connection with any Provisional Sum the services to be provided include any matter of design or specification of any part of the Permanent Works or of any equipment or plant to be incorporated therein such requirement shall be expressly stated in the Contract and shall be included in any nominated Sub-Contract. The nominated Sub-Contract shall specify that the nominated Sub-Contractor providing such services will save harmless and indemnify the Contractor from and against the same and from all claims, proceedings, damage, costs, charges and expenses whatsoever arising out of or in connection with any failure to perform such obligations or to fulfill such liabilities.

(4) **Payments to Nominated Sub-Contractors**

For all work executed or goods, materials, or services supplied by any nominated Sub-Contractor, these shall be included in the Contract Price.

(a) the actual price paid or due to be paid by the Contractor on the direction of the Engineer, and in accordance with the Sub-Contract.

(b) the sum, if any entered in the Bill of Quantities for labour supplied by the Contractor in connection therewith, or if ordered by the Engineer pursuant to Clause 58 (2) (b) hereof, as may be determined in accordance with Clause 52 hereof.

(c) in respect of all other charges and profit, a sum being a percentage rate of the actual price paid or due to be paid calculated, where provisions have been made in the Bill of Quantities for a rate to be set against the relevant Provisional Sum, at the rate inserted by Contractor against that item or, where no such provision has been made, at the rate inserted by the Contractor in the Appendix to the TENDER and repeated where provision for such is made in a special item provided in the Bill of Quantities for such purpose.

(5) **Certification of Payments to Nominated Sub-Contractors.**

Before issuing, under Clause 60 hereof, any certificate, which includes any payment in respect of work done or goods, materials or services supplied by any nominated Sub-Contractor, the Engineer shall be entitled to demand from the Contractor reasonable proof that all payments, less retentions included in the previous certificate in respect of the work or goods, materials or services of such nominated Sub-Contractor have been paid or discharged by the Contractor in default whereof unless the contractor shall.

(a) inform the Engineer in writing that he has reasonable cause for withholding or refusing to make such payments and

(b) produce to the Engineer reasonable proof that he has so informed such nominated Sub-Contractor in writing.

Contractor in writing

The Employer shall be entitled to pay to such nominated Sub-Contractor direct upon the certificate of the Engineer, all payments less retentions provided for in the Sub-Contractor which the Contractor has failed to make to such nominated Sub-Contractor and to deduct by way of set off the amount so paid by the Employer from any sums due or which may become due from the Employer to the Contractor. Provided always that, where the Engineer has certified and the Employer has paid direct as aforesaid, the Engineer shall in issuing any further certificate in favour of Contractor deduct from the amount thereof the amount so paid, direct as aforesaid but shall not withhold or delay the issue of the certificate itself when due to be issued under the terms of the Contract.

(6) **Assignment of Nominated Sub-Contractors Obligation**

In the event of the nominated Sub-Contractor as hereinbefore defined having undertaken towards the Contractor in respect of the work executed or the goods, materials or services supplied by such nominated Sub-Contractor, any continuing obligation extending for a period exceeding that of the period of Maintenance under the Contract the Contractor shall at any time after the expiration of Period of Maintenance assign to the Employer at the Employer's request and cost the benefit of such obligation for the un-expired duration thereof.

60.0 CERTIFICATES AND PAYMENT

(1) Unless otherwise provided payments shall be made at monthly intervals in accordance with the condition set out in Section in the Clause numbered 26.

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(2) Where advances are to be made by the Employer to the Contractor in respect of Constructional plant and materials the conditions of payment and repayment shall be as set out in Section-3, Special conditions of contract.

(3) No certificate other than the Maintenance Certificate referred to in Clause 62 hereof shall be deemed to constitute approval of the Works.

(4) The Contract shall not be considered as completed until a Maintenance Certificate shall have been signed by the Engineer and delivered to the Employer stating that the works have been completed and maintained to his satisfaction. The Maintenance Certificate shall be given by the Engineer within twenty-eight days after expiration of the Period of Maintenance or if different periods of Maintenance shall become applicable to different sections or parts of the Works, the expiration of the latest such period, or as soon thereafter as any works ordered during such period pursuant to Clause 49 and 50 hereof shall have been completed to the satisfaction of the Engineer and full effect shall be given to this Clause notwithstanding any previous entry on the works or the issue of the Maintenance Certificate shall not be a condition precedent to payments to the Contractor of the second portion of the retention money in accordance with the conditions set out in Section 3 in the Clause numbered 26.

(5) **Cessation of Employer's Liability**

The Employer shall not be liable to the Contractor for any matter or thing arising out of or in connection with the contract or the execution of works, unless the Contractor shall have made a claim in writing in respect thereof before the giving of the Maintenance Certificate under this Clause.

(6) **Unfulfilled Obligations**

Notwithstanding the issue of the Maintenance Certificate the Contractor and Subject to sub clause (2) of this Clause the Employer shall remain liable for the fulfillment of any obligation incurred under the provisions of the Contract prior to the issue of the Maintenance Certificate which remain unperformed at the time such Certificate is issued and for the purpose of determining the nature and extent of any such obligation the Contract shall be deemed to remain in force between the parties hereof.

61.0 REMEDIES AND POWERS

Default of Contractor

(1) If the Contractor shall become bankrupt or have a receiving order made against him or shall present his petition in bankrupt or shall make an arrangement with or assignment in favour of his creditors or shall agree to carry out the Contract under committee of inspection of his creditors or, being a XXXXXX shall go into liquidation (other than a voluntary liquidation for the purposes of amalgamation or reconstruction) on if the contractor shall assign the contract without the consent in writing of the Employer first obtained on shall have an execution device on his goods, or if the Engineer shall certify in writing to the Employer that in his opinion the Contractor.

(a) has abandoned the Contract, or

(b) without reasonable excuse has failed to commence the works or has suspended the progress of the Works for twenty-eight days after receiving from the Engineer written notice to proceed, or

(c) has failed to remove materials from the Site or to pull down and replace work for twenty eight days after receiving from the Engineer written notice that the said materials or work had been condemned and rejected by the Engineer under these conditions, or

(d) despite previous warning by the Engineer in writing is not executing the Works in accordance with the Contract or is persistently or flagrantly neglecting to carry out his obligations under the contract.

or

(e) has to the detriment of good workmanship or in defiance of the Engineer's instructions to the contrary sub-let any part of the Contract

Then the Employer may after giving fourteen days notice in writing to the Contractor enter upon the site and the Works and expel the Contractor there from without thereby voiding the Contract or releasing the Contractor from any of his obligations or liabilities under the Contract or affecting the rights and powers conferred on the Employer or the Engineer by the Contract and may himself complete the Works or may employ any other Contractor to complete the works. The Employer or such other contractor may use for such completion so much of the Construction plant, Temporary

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Works and materials, which have been deemed to be reserved exclusively for the execution of the Works under the provisions of the Contract as he or they may think proper and the Employer may at any time sell any of the said Constructional plant Temporary Works and unused materials and apply the proceeds of sale in or towards the satisfaction of any sums due or which may become due to him from the Contractor under the Contract.

(2) **Valuation of Date of Forfeiture**

The Engineer shall as soon as may be practicable after any such entry and expulsion by the employer, fix and determine expert, or by or after reference to the parties or after such investigation or enquiries as he may think fit to make or institute, and shall certify what amount, if any, had at the time of such entry and expulsion been reasonably earned by or would reasonably accrue to the Contractor in respect of work then actually done by him under the Contract and the value of any of the said unused or partially used materials any Constructional Plant and any Temporary Works.

(3) **Payment after Forfeiture**

If the Employer shall enter and expel the Contractor under this Clause he shall not be liable to pay to the Contractor any money on account of the Contractor until the expiration of the Period of Maintenance and thereafter until the costs of execution and maintenance damages for delay in completion if any and all other expenses incurred by the Employer have been ascertained and the amount thereof certified by the Engineer. The Contractor shall then be entitled to receive only such sum or sums, if any, as the Engineer may certify would have been payable to him upon due completion by him after deducting the said amount. If such amount shall exceed the sum which would have been payable to the Contractor on due completion by him then the Contractor shall upon demand pay to the Employer the amount of such excess and it shall be deemed a debt due by the Contractor to the Employer and shall be recoverable accordingly.

62.0 Urgent Repairs

If, by reason of any accident or failure or rather event occurring to in or in connection with the Works, or any part there of either during execution of the Works or during the Period of Maintenance any remedial or other work or repair shall in the opinion of the Engineer or the Engineer's Representative be urgently necessary for the safety of the Works and the Contractor is unable or unwilling at once to do such work or repair the Employer may employ and pay other persons to carry out such work or repair as the Engineer or the Engineer's Representative may consider necessary. If the work or repair so done by the Employer is work which in the opinion of the Engineer, the Contractor was liable to do at his own expense under the Contract all expenses Employer or may be deducted by the Employer from any Monies due or which may become due to the Contractor. Provided always that the Engineer or the Engineer's Representative as the case may be shall as soon after the occurrence of any such emergency as may be reasonably practicable notify the Contractor thereof in writing.

63.0 SPECIAL RISKS

Notwithstanding anything in the Contract contained:

(1) The Contractor shall be under no liability whatsoever whether by way of indemnity or otherwise for or in respect of destruction of or damage to the Works save to work condemned under the provisions of Clause 39 hereof prior to the occurrence of any special risk hereinafter mentioned or to property whether of the Employer or third parties or for or in respect of injury or loss of life which is the consequence of any special risk as hereinafter defined. The Employer shall indemnify and save harmless the Contractor against and from the same and against and from all claims proceedings damages costs charges and expenses whatsoever arising there out or in connection therewith.

(2) If the works or any materials on or near or in transit to the Site, or any other property of the Contractor used or intended to be used for the purposes of the Works shall sustain destruction or damage by reason of any of the said special risks the Contractor shall be entitled to payment for :

(a) any permanent work and for any materials so destroyed or damaged and so far as may be required by the Engineer or as may be necessary for the completion of the Works on the basis of cost plus such profit as the Engineer may certify to be reasonable.

(b) replacing or making good any such destruction or damage to the Works.

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(c) replacing or making good such materials or other property of the Contractor used or intended to be used for the purpose of the Works.

(3) Destruction damage, injury or loss of life caused by the explosion or impact whenever and wherever occurring of any mine bomb shell grenade or other projectile missile munitions or explosive of war shall be deemed to be consequence of the said special risks.

(4) The Employer shall repay to the Contractor any increased cost of reconstructing work condemned under the provisions of Clause 39 hereof prior to the occurrence of any special risk which is howsoever attributable to or consequent on or the result of or in any way whatsoever connected with the said special risks subject however to the provisions in this Clause hereinafter contained in regard to outbreak of war but the Contractor shall as soon as any such increase of cost shall come to his knowledge forthwith notify the Engineer thereof in writing.

(5) The special risks as war hostilities (whether war be declared on not) invasion act of foreign enemies the nuclear any pressure waves risk described in Clause 20 (2) hereof on in so far as it relates to the country in which the works are being or are to be executed or maintained rebellion revolution in correction military or usurped power, civil war or unless solely restricted to the employees of the Contractor or of his Sub-Contractors and arising from the conduct of the Works of commotion or disorder.

(6) If during the currency of the Contract, there shall be an outbreak of war, whether war is declared or not, in any part of the Works which, whether financially or otherwise, material shall unless and until the Contract is terminated under the provisions of this Clause continue to use his best endeavors to complete the execution of the works. Provided always that the Employer shall be entitled at any time after such outbreak of war to terminate the Contract by giving written notice to the Contractor and upon such notice being given this contract shall except as to the rights of the parties under the Clause and to operation of Clause 67 hereof terminate but without prejudice to the rights of either party in respect of any antecedent breach

(7) **Removal of Plant on Termination**

If the contract shall be terminated under the provisions of the last preceding sub clause, the contractor shall, with all reasonable dispatch remove from the Site all Constructional Plant and shall give similar facilities to his Sub-Contractors to do so.

(8) **Payment if Contract Terminated**

If the Contract shall be terminated as aforesaid the Contractor shall be paid by the Employer insofar as such amounts or items shall not have already been covered by payments on account made to the Contractor for all works executed prior to the date of termination at the rates and prices provides in the Contract and in addition:

(a) The amounts payable in respect of any preliminary items, so far as the work or service comprised therein has been carried out of performed and a proper proportion as certified by the Engineer of any such items, the work or service comprised in which has been partially carried out or performed.

(b) The cost of materials or goods reasonably ordered for the works which shall have been delivered to the Contractor or of which the Contractor is legally liable to accept delivery, such materials or goods becoming the property of the Employer upon such payments being made by him.

(c) A sum to be certified by the Engineer being the amount of any expenditure reasonably incurred by the Contractor in the expectation of completing the whole of the works insofar as such expenditure shall not have been covered by the payment in this sub Clause before mentioned

(d) Any additional sum payable under the provisions of sub clause (1) (2) and (4) of this clause.

(e) The reasonable cost of removal of Constructional Plant under sub clause (7) of this clause and if required by the Contractor return thereof the Contractor's main plant yard in his country of registration or to other destination at no greater cost.

(f) Against any payments due from the Employer under this sub-clause the Employer shall be entitled to be credited with any outstanding balances due from the Contractor for advances in respect of Constructional Plant and materials and any other sums which at the date of termination were recoverable by the Employer from the Contractor under the terms of the Contact.

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64.0 **FRUSTRATION**

Payment in Extend of Frustration

If a war or other circumstances outside the control of both parties arises after the Contract is made so that either party is prevented from fulfilling in contractual obligations or under the law governing the Contract the parties are released from further performance then the sum payable by the Employer to the Contractor in respect of the work executed shall be the same as that which would have been payable under Clause 65 hereof if the Contract had been terminated under the provisions of Clause 65 hereof.

65.0 **SETTLEMENT OF DISPUTES**

Settlement of Disputes Arbitration

Except as otherwise provided in this contract all questions and disputes relating to the meaning of the specifications design, drawings and instructions herein before mention and as to think whatsoever, in any way, arising out of or relating to the contract, design, drawings , specifications, estimates, concerning the works, or the excavation or failure to exclude the same, whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the Commissioner, MUNICIPAL CORPORATION BHOPAL shall give his written instructions and /or decisions within a period of 60 days of such request. This period can be extended by a mutual consent of the parties.

Upon receipt of written instructions or decisions, the parties shall promptly proceed without delay to comply such instructions or decisions. If the Commissioner, MUNICIPAL CORPORATION BHOPAL fails to give his instructions or decisions in written within a period of 60 days or mutually agreed time after being requested or if the parties may within 60 days prefer and appeal to the Chief Engineer Directorate UADD Bhopal. who shall afford an opportunities to the parties of being heard and to offer evidence in support of his appeal. The Chief Engineer Directorate UADD Bhopal will give his decision within 90 days. If any party is not satisfied with the decision of the Chief Engineer Directorate UADD Bhopal he can refer such dispute for arbitration to the M.P. Arbitrator Tribunal governed as per The MP Madhyastha Abhikaran Adhiniyam, 1996

66.0 **NOTICES**

Service of Notices on Contractor

(1) All certificates, notices or written orders to be given by the Employer or by the Engineer to the Contractor under the terms of the Contract shall be served by sending by registered post to or delivering the same to the Contractor's principal place of business or such other address as the Contractor shall nominate for this purpose.

Service of Notices on Employer or Engineer

(2) All notices to be given to the Employer or to the Engineer under the terms of the Contract shall be served by sending by registered post or delivering the same to the respective address nominated for that purpose in Section-3 of these conditions.

Special Conditions of Contract Change of Address

(3) Either party may change a nominated address to another address in the country where the works are being executed by prior written notice to the other party and the Engineer may do so by prior written notice to both parties.

67.0 **DEFAULT OF EMPLOYER**

Default of Employer

(1) In the event of the Employer.

(a) failing to pay to the Contractor the amount due under any certificate of the engineer within thirty days after the same shall have become due under the terms of the Contract subject to any deduction that the Employer is entitled to make under the Contract.

(b) interfering with or obstructing or refusing any required approval to the issue of any such certificate or

(c) becoming bankrupt or being a company going into liquidation other than for the purpose of a scheme of reconstruction or amalgamation, or

(d) giving formal notice to the Contractor that for unforeseen reasons due to economic dislocation it is impossible for him to continue to meet his contractual obligations the Contractor shall be entitled to terminate his employment under the Contract after giving thirty days prior written notice to the Employer, with a copy to the Engineer.

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(2) Upon the expiry of the thirty days notice referred to in sub-clause (1) of this Clause, the Contractor shall, notwithstanding, the provision of Clause 53 (1) hereof with all reasonable dispatch remove from the Site all Constructional Plant brought by him thereon.

(3) In the event of such termination the Employer shall be under the same obligations to the Contractor in regard to payment as if the contract had been terminated under the provisions of Clause 65 hereof.

68.0 LEGISLATION

Subsequent Legislation

(1) If, after the publication of NIT and thirty days prior to the last date for submission of TENDERs for the works there occur changes to any national or State Statute, Ordinance, Decree or other Law or any regulation or bye-law of any local or other duly constituted authority or the introduction of any such State Statute, Ordinance, Degree, Law, regulation or bye-law which causes additional or reduced cost to the Contractor other than under sub clause (1) of this Clause in the execution of the works such additional or reduced cost shall be certified by the Engineer and shall be paid by or credited to the Employer and the Contract Price adjusted accordingly.

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Contract Data Sheet

For Section 3 - GCC

Clause reference	Particulars	Data
3	Language & Law of Contract	English & Indian Contract Act 1872
4	Address & contact details of the Contractor	Annexure I-1 of ITB
	Address & contact details of the Employer	Commissioner Municipal Corporation Bhopal District: Bhopal (M.P.)
5	Subcontracting permitted for contract value more than	Refer clause 5 of GCC
6	Technical Personnel to be provided by the contractor – requirement & penalty.	Annexure P
12 (2)	Procedure for settlement of disputes by the Standing Committee	As per GCC
15 (1)	Competent Authority for granting Time Extension	Commissioner (after getting approvals of the competent authority as per the MP Municipal Corporation Act, 1956/MP Nagar Palika Act 1960.
19 (1)	Quality Control measures List of equipments for lab	As per CPHEEO Manual To be attached separately
28 (1)	% value of work not completed as penalty	----------
29	Performance Security	5% of the Tender cost
29	Security Deposit to be retained out of running bills	5% of the bill amount paid
38	Model Labour Laws	Annexure A
40	Defect Liability Period after completion of works	12months

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Section-4
SPECIAL CONDITIONS OF CONTRACT

1. GENERAL:

The special conditions are supplementary conditions to the TENDER and shall form the part of the contract.

1.1 It shall be the responsibility of BIDDER to co-ordinate with traffic authority, Railways, MPRDC, MUNICIPAL CORPORATION BHOPAL , M.P. Electricity Board, Telephone authority and concerned Public Health Engineering, Water resource Department for obtaining necessary permissions, shift of existing pipe line, sewer line, cable etc. as may be required for the due fulfillment of the obligations under this contract. Necessary assistance from the organization shall be rendered for seeking required permissions from different authorities but it shall be the primary responsibility of the contractor/firm to obtain the permissions. If as a result of excavation of trenches the underground services such as water main electric telephones cable, sewer lines become naked and unsupported it shall be the responsibility of the contractor to make suitable and necessary arrangement as per direction of the Engineer-in-Charge for their protection and no extra payment on this account will be made to the contractor. Any damages caused to the above mentioned underground services due to negligence of the contractor or otherwise the same shall be made good by the contractor at his own cost.

1.2 The BIDDER shall be responsible for safety of labour public property and is expected to take due precautions required under the law to safeguard accidents and to provide safety conditions such as red lanterns with caution board barricading providing pedestrian crossing etc. In case of any damages to property or labour the BIDDER shall be responsible to pay compensation as may be decided by appropriate authority/Court of law.

1.3 The contractor shall have to make his own arrangement for labour and its hutment. If any government land is available near by the work site, it may be allotted to the contractor for putting up the labour camp and stores etc. with the permission of government department but on completion of the work the labour camp should be removed immediately by the contractor failing to do so, the organization will dismantle the same at the risk and cost of the contractor and the dismantled material will become the property of this organization for which the contractor shall have no legal claim.

1.4 The contractor shall be responsible for any defect in the work for a period of 12 months after completion of the work and testing (after maintenance). In case of any defect coming to the notice within this period the same shall be made good by the contractor at his own cost and no extra claim shall be entertained. If necessary the contractor shall uncover the earth and expose the work at his cost where any damage may be suspected to have occurred. Contractor shall also be responsible for the continuous watch and ward of work executed during the execution of work and till the works handed over to the organization in case of any theft or damage he shall replace the same at his own cost. He shall be solely responsible for any kind of accident before handing over the TENDERed work to the organization.

1.5 The BIDDERs are required to take contingence of all the above conditions while quoting the rates of all items involved in the works.

2.0 Materials for permanent works

2.1 The Contractor shall be entitled to such sum as the Engineer may consider proper in respect of materials intended for but not yet incorporated in the Permanent works provided that:

(a) the materials are in accordance with the Specification for the Permanent Works. The construction materials should be got tested in authorized testing laboratory as per special conditions attached for Mandatory tests.

(b) Such materials have been delivered to Site, and are properly stored and protected against loss or damage or deterioration to the satisfaction of the Engineer.

(c) The Contractor's records of the requirements, orders, receipts and use of materials are kept in a form approved by the Engineer and such records shall be available for inspection by the Engineer.

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(d) The Contractor shall submit with his monthly statement the estimated value of the materials on Site together with such documents as may be required by the Engineer for the purpose of valuation of the materials and providing evidence of ownership and payment therefore:

(e) Ownership of such materials shall be deemed to vest in the Employer. And

(f) The sum payable for such materials on Site shall not exceed 75 percent of the

(i) ex-factory/ex-warehouse price of locally manufactured materials or

(ii) stockpile value of locally produced materials such as Bricks Sand Aggregates and Crushed Stone etc.

3.0 Accuracy of Lines, Levels and Grades

3.1 The various works shall be done true to line, level and grade. The periodical checking of these by the Engineer or Engineer's representative shall not absolve the Contractor of his responsibility regarding their accuracy. In case of any deviation or discrepancy in line, level or grade at the meeting faces, the contractor shall make good the discrepancy at his own cost and without any compensation for the additional work if any involved. Whenever such a discrepancy is found to arise at the junction of works being carried out by different Contractors the responsibility to set right their respective discrepancies shall be fixed by the Engineer whose decision shall be final and binding on the Contractors concerned. Engineer shall further have the unquestioned right if need be to rectify the discrepancies and recover the cost from the Contractor or Contractors according to proportions as he may consider reasonable.

3.2 The details of location and the nearest permanent bench marks. Reference Grid Marks shall be obtained by the Contractor in writing from the Engineer. Temporary bench mark for day to day use shall be fixed with reference to above permanent bench marks with double leveling. The Grid Co-ordinates and its references may be obtained from the Engineer.

4.0 Arrangements of Water and Electric Power

Arrangement for water and electric power required by the Contractor for the works shall be made by him at his own cost. Employer will however recommend to the State Electricity Board for giving the connection and power to the Contractor. However the Employer will bear no responsibility in this respect.

5.0 Measures for Prevention of Fire

5.1 The Contractor shall not set fire to any standing Jungle, trees, brush wood or grass without a written permission from the Engineer.

5.2 When such permission is given and also in all cases when destroying out of dug trees, brush wood, grass etc. by fire, the Contractor shall take necessary measures to prevent such fire spreading to or otherwise damaging surrounding property.

5.3 Any damage caused by the spreading of such fire, whether in or beyond limits of the Employer's property, the amount of the damage shall be recovered by the Engineer from the Contractor's Bills as damages or deducted by any other duly authorized officer from any sums that may be due or become due from the Employer to the Contractor under the contractor otherwise.

5.4 The Contractor shall bear the expenses of defending any action or law proceedings that may be brought by any person by injury sustained owing to neglect of precautions to prevent the spread of fire and shall pay any damage and cost that may be awarded in consequence.

6.0 Deployment of Departmental Machinery and Equipment by the Contractor

The Contractor shall himself procure and employ his own machinery and equipment for the work under contract with him. Only in exceptional circumstances if in the opinion of Engineer at any stage of the contract it becomes necessary to employ departmental machinery and equipments on the work of the Contractor for any reason whatsoever the Engineer may order for the employment of departmental machinery and equipment under his orders and the rates to be charged for the use of machinery and equipment of the Department by the Contractor shall be according to the rates approved by the competent authority and Contractor will have to aTendere by his orders.

7.0 Rectifying or Replacing Defective Work

All work not conforming to the specifications shall be demolished and replaced or rectified by the Contractor at his own cost as may be ordered by the Engineer.

8.0 Conversion of Units

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Whenever in the contract agreement dimensions and units have been expressed in FPS system, the same will be converted into Metric system units by applying the standard conversion table of Indian Standard Institution so as to arrive at the corresponding figures arithmetically and the Contractor will have to accepted the figures so derived without any claim or compensation whatsoever.

9.0 Climatic Conditions

The Engineer may order the Contractor to suspend any work that may be subject to damage by climatic conditions and no claim of the Contractor will be entertained by the Employer on this account.

10.0 Damage to Works

The work whether fully completed or incomplete all materials, machineries, plats, tools temporary buildings and other things connected therewith shall remain on the risk and in the sole charge of the Contractor until the complete work has been delivered to the Engineer and till completion certificate has been issued by the Engineer. Until such delivery of the completed work the Contractor shall at his own cost take all precautions reasonably necessary to keep all aforesaid works materials machineries plants, temporary buildings and other things connected therewith free from any losses or damages and in event of the same or any part thereof being lost or damaged, he shall forthwith reinstate and make good such loss or damage at his own cost.

11.0 Works inter-related with Progress on other Jobs.

The contractor shall not be entitled to any compensation for any delay in the execution of related items of work to be executed by the Department or under other contracts. The short fall in the progress of work that may occur due to such contingencies shall have to be made up by the Contractor by deploying additional resources so as to ensure that the work under the contract is completed within the prescribed time.

12.0 Site Order Book

A site order book shall be kept at the Employer's office on the site of the work. As far as possible all orders regarding the works are to be entered in this book. All entries therein shall be signed by the Engineer on his representative and the contractor or his authorized representative. In important cases the Engineer will countersign the entries which have been made. The site order book shall not be removed from the work site except with written permission of the Engineer and the Contractor or his representative shall be bound to take note of all instructions and directions meant for the Contractor as entered in the site order book without having to be called on separately to note them. The Engineer shall submit periodically copies of the remarks in the site order book to the Employer for record and to the contractor for submitting compliance report.

13.0 Foundations Depth/Levels.

The drawings indicate the general foundation levels to be adopted for the different conditions of the structures. During execution these levels may be modified to suit the site conditions. The Contractor shall not be liable to any compensation for any minor delays on this account. However this may be considered for granting suitable extension in the completion period if necessitated by such events.

14.0 Approach Road

Necessary haul road and roads to watch sources and quarries connected with the work shall be satisfactorily constructed and maintained by the Contractor at his own cost.

15.0 Construction Programme

The Contractor shall submit within two weeks of receipt of notice to proceed with the work the programme for construction of the work allotted to him and the machinery to be engaged by him for the performance of the contract in conformity with clause 14 of General Conditions of Contract. The Construction Programme shall be in such form and details to properly show the sequence of operations and period of time required for completion of the work under each item of the Schedule within the frame work of his Construction Programme.

16.0 Interference with Work of Other Agency.

The Contractor must not interfere with the work of other Contractors, who may be employed simultaneously or otherwise by the Employer.

17.0 Regulation and Bye-Laws

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The contractor shall conform to the regulations, bye laws or any other statutory rules made by any local authorities or by the Government and shall protect and indemnify the Employer against any claims or liability arising from or based on the violations of any such laws, ordinance, regulations, orders and decrees etc.

18.0 Contractor to use Excavated Hard Rock

All useful materials like hard rock etc. excavated by the Contractor at site shall be the property of Employer and shall be issued to the Contractor at the issue rate of Rs. 45/- per cum. It shall be binding on the Contractor to use it as rubble, metal aggregate etc. after breaking into the required size for concrete work and as directed by the Engineer.

19.0 Income Tax

During the course of contract period, deductions of Income Tax shall be made at the prevailing rate of Department of Income Tax Government of India and as revised from time to time as per the advice of Income Tax authorities.

20.0 Supply and Arrangement of Materials

(1) The contractor shall make his own arrangement for supply of materials including cement and steel. The contractor shall be responsible for all transportation and storage of the materials at site and shall bear all the related costs. The Engineer shall be entitled at any time to inspect or examine all such materials. The contractor shall provide reasonable assistance for such inspection or examination as may be required.

(2) The contractor shall keep an accurate record of use of materials like cement and steel used in the works in a manner prescribed by the Engineers.

21.0 Cement

(a) The Contractor shall stock his requirement so as to ensure utilization of cement within 60 days but in no case later than 90 days Cement older than the period aforesaid shall not be used on any work except with the written permission of the Engineer, and after satisfactorily passing such lest as he may specify. The Contractor shall forthwith remove from the work such cement that Engineer has not allowed. The final disposal of such cement shall comply with the rules in force at the time and as the Engineer may approve

(b) Large stocks of cement shall not be kept at the works but only sufficient quantities shall be kept to assure continuity of the work. The Contractor shall provided and maintain efficient water proof storage sheds for cement on the site of work. It shall be stacked on the platform 30 cms. above the floor level and shall be covered with tarpaulin or any other impervious covering materials in order to protect the cement bags from moisture. The cement shall be neatly stacked in an orderly manner so as to allow an easy access and count. The arrangement of storage and utilization shall be such as to ensure the 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 date of receipt and proposed utilization of cement laying in the stores at site.

(c) The Engineer shall at all time have access to the stores at sites of the Contractor. He shall have authority to check and examine the method of storage, record accounting and security provided by the Contractor. The Contractor shall comply with instructions that may be issued by the Engineer in this connection. The Contractor shall further at all times satisfy the Engineer on demand and by the production of records and books or submission of returns and proforma or by other proofs that may be demanded that the cement brought from the approved manufacturer with date of receipt & consumption etc. The Contractor shall at all times keep his records up to date to enable the Engineer to apply such checks as he may desire to impose.

The contractor shall provide a double locking arrangement to the store the key of one of the locks being with the Engineer or his representative at site. The Engineer or his authorized agent will have the authority to verify the stocks and check the consumption in any manner he thinks proper.

22.0 Certificates and Payments Interim Payment Certificate

22.1 The Contractor shall submit and application for interim payment in three copies to the Engineer at the end of each month in a form approved by the Engineer. The application shall include the following items as applicable which shall be taken into account in the sequence listed:

(i) the estimated contract value in Rupees of the Permanent Works executed up to the end of the month in question, obtained by applying the base unit rates and prices in the Bill of

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Quantities to the quantities measured by the Engineer pursuant to Clause 56 of General Condition of Contract.

(ii) the estimated contract value of the Permanent Works obtained as in (i) above, executed up to the end of the previous month;

(iii) the estimated contract value at base unit rates and prices, expressed in Rupees of the Permanent Works for the month in question obtained by deducting (ii) from (i).

(iv) an amount reflecting any changes in cot and legislation pursuant to Clause 28 of Special Conditions of Contract.

(v) amounts approved in respect of Day work executed up to the end of the month in question less amounts for Day work certified in the previous Interim Payment Certificate and amounts, if any, reflecting the changes in cost and legislation pursuant to clause 28 of Special Conditions of Contract;

(vi) any amount to be withheld under the retention provisions of clause 26 of Special Conditions of Contract determined by applying the percentage set forth in sub-clause 26.1 hereafter to the sum of the amounts under sub paragraphs (iii) and (v)

(vii) any credit on debit for the month in question in respect of materials on Site intended for but not yet incorporated in the Permanent Works in the amount and under the conditions set forth in clause 1 here before.

(viii) any amount to be deducted on account of the Advance Loan repayment under the provisions set forth in clause 23 hereof.

(ix) any other sum to which the Contractor may be entitled under the Contract.

22.2 Within 30 days of receipt of the said application for interim payment, it shall be approved or amended such that, in the Engineer's opinion the certificate reflects the amount due to the Contractor in accordance with the Contract. In cases where there is a difference of opinion as to the value of any item the EIC view shall prevail. When the EIC has determined the amount due to the Contractor he shall issue to the Employer and the Contractor a certificate hereinafter called "Interim Payment Certificate" certifying the amount due to the Contractor.

22.3 No Interim Payment Certificate shall be issued for a sum less than ((equivalent) 2% (two) of the contract amount.

23.0 Security Deposit

23.1. A retention money amounting to 5 percent of the amount included in any monthly Interim Payment Certificate pursuant to clause 26 hereof due to the Contractor on account of Permanent Works executed by him shall be made by the Engineer in the first and following Certificate until such time as the cumulative total of such deductions (herein referred to as the Security Deposit) shall amount to 5 percent of the Contract Price named in the letter of Acceptance.

24.0 Corrections

The Engineer may by any Interim Payment Certificate make any corrections or modifications in any previous Certificate (other than one purporting to be a Final Payment Certificate) which shall have been issued by him and shall have power to modify or withhold any Interim Payment Certificate if the Works or any part hereof are not being carried out to his satisfaction.

25.0. Final Account and Final Certificate

25.1 Not later than 3 months after the date of issue of the Maintenance Certificate the Contractor shall submit a draft statement of Final Account and supporting documentation to the Engineer showing in detail the value of the work done in accordance with the Contract together with all further sums which the Contractor considers to be due to him under the Contract up to the date of the Maintenance Certificate (hereinafter called the "Contractor's Draft Final Account).

25.2 Within 3 months after receipt of the Contractor's Draft Final Account and of all information reasonably required for its verification the Engineer shall determine the value of all matters to which the Contractor is entitled under the Contract. The Engineer shall then issue to the Employer and the Contractor a statement (hereinafter called the "Engineer's Draft Final Account" showing the final amount to which the Contractor is entitled under the Contract. The Employer and Contractor shall sign the Engineer's Draft Final Account as an acknowledgement of the full and final value of the Work performed under the Contract and shall promptly submit a signed copy thereinafter called the "Final Account" to the Engineer.

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Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

25.3 On receipt of the Final Account the Engineer shall promptly prepare and issue to the Employer and the Contractor a Final Payment Certificate certifying any further monies due to the Contractor in respect of the Contract. The Employer shall then make such payment as certified by the Engineer to the Contractor within a reasonable period of time.

26.0 Special Condition Regarding Conditional TENDER

The BIDDER will have to give an under taking with the instrument of Earnest Money to the effect that there are no conditions in the TENDER and if any conditions are found the same shall be ignored.

If such an under taking is not found with the Earnest Money the TENDER will not be opened and not taken into consideration. However in case the contractor gives such an undertaking at the time of opening of TENDER the same may be considered.

Commissioner
MUNICIPAL CORPORATION BHOPAL

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Ltd.

Section-5
SCOPE OF WORK

S. No.	Name of the work Commissioning & Performance	Estimated Cost (In Lacs)
1.0	Construction of Intake Well of diameter 8.00 m & 18.00 m height & Raw water pump house of 5.0m height for 29.00 MLD raw water along with approach bridge complete.	110.48
2.0	Supply, installation, erection, testing, commissioning and trial run of vertical deep well turbine pumping sets (Pumps and Motors) of following capacity with allied electrical / mechanical accessories like starters control panel, pipe valves including all etc. complete job with necessary civil mechanical and electrical works for Raw water in BHOPAL water supply scheme under UIDSSMT program. **Raw water pumps (100 % stand by)** a. Discharge 183 lps, Total Head 55 meters, Qty. 23 sets raw water Vertical Turbines pumps.	143.76
3.0	Providing, laying & jointing including excavations pipe bedding, refilling, testing commissioning & trial run of Raw water pumping main of 600 mm Diameter & 600 m long pipe from intake to T.P. at BHOPAL the pipe shall be DI K-9 class with suitable joints specials appurtenances valves interconnectivity with pumps and treatment plant complete.	68.55
4.0	Design, Construction Commissioning & Performance of 29 MLD capacity Treatment Plant. This work shall comprise of the following items :- 1. Chemical house and chemical feeding equipments. 2. Flash mixer. 3. Clariflocculator. 4. Rapid sand gravity filters. 5. Disinfections arrangements. 6. Laboratory & laboratory equipments. 7. Clear Water Pump House and sump well of 700 KL capacity.	840.50
5.0	Supply, installation, erection, testing, commissioning and trial run of Horizontal split casing Centrifugal pumping sets (Pumps and Motors) of following capacity with allied electrical / mechanical accessories like starters control panel, pipe valves including all etc. complete job with necessary civil mechanical and electrical works for Clear water & clear water pumping in BHOPAL water supply scheme under UIDSSMT program. **Clear water pumps (50 % stand by)** a) Discharge 174 lps, Qty. 3 sets clear water pumps with 170 m head.	211.30
6.0	Providing, laying & jointing including excavations pipe bedding, refilling, testing commissioning & trial run of clear water pumping main of 500 mm Diameter & 6085 m long pipe from T.P. to junction 1 at BHOPAL the pipe shall be DI K-9 class with suitable joints specials appurtenances valves interconnectivity with pumps and treatment plant complete	538.74
7.0	Providing, laying & jointing including excavations pipe bedding, refilling, testing commissioning & trial run of Clear water Feeder main of from Junction point to various OHTs at BHOPAL 150 mm 195 m DI K-7 200 mm 1182 m DI K-7 300 mm 1678 m DI K-7 400 mm 2242 m DI K-7 Total 5297	210.84

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S. No.	Name of the work Commissioning & Performance	Estimated Cost (In Lacs)
8.0	Design & Construction of 5 nos. 18 m staging OHT's each having storage capacity 2000 KL, Having cumulative capacity 10000 KL.	1050.00
9.0	Providing and Laying Distribution Network Comprising of 110mm to 355 mm HDPE PN-6 pipe & 350 mm to 450 mm DI K-7 pipe having total length of 23051 meters in BHOPAL . 110 mm 87016 m HDPE PN-6 125 mm 26943 m HDPE PN-6 140 mm 11062 m HDPE PN-6 160 mm 6916 m HDPE PN-6 180 mm 3089 m HDPE PN-6 200 mm 4015 m HDPE PN-6 225 mm 3291 m HDPE PN-6 250 mm 2759 m HDPE PN-6 280 mm 3482 m HDPE PN-6 315 mm 3142 m HDPE PN-6 355 mm 2341 m HDPE PN-6 350 mm 811 m DI K-7 400 mm 1904 m DI K-7 450 mm 1253 m DI K-7 500 mm 670 m DI K-7 600 mm 63 m DI K-7 **Total 158757 m**	1578.16
10.0	Providing & commissioning for connection of HT feeder line having length 4.00 Km	40.00
11.0	Providing House service connections incl. 20 mm MDPE pipe 5 m alongwith excavation road restoration EEC meter complete 8500 nos.,	212.50
12.0	Bulk meters 1 no. 600 mm RWPM, 2 nos. 500 mm Gravity main, 1 ecah on 5 OHTs having outlet pipe dia of 500 mm	25.00
	Total	**5029.82**

Tejal Environmental Products Ltd.

Authorised Signatory

Section - 6

APPENDIX : 2.18

(See Paragraph 2.091)

TENDER FOR A LUMP SUM CONTRACT:

I/We do hereby TENDER to execute the whole of the work described in the drawing and according to the annexed specification for the sum of Rs..... Lacs and should this TENDER be accepted I/We do hereby agree and bind myself/ourselves to a Tender by and fulfill all the conditions annexed to the said specification or in default thereof to forfeit and pay to the MUNICIPAL CORPORATION BHOPAL the penalties of sums of money mentioned in the said conditions viz.

Dated_____ Bidder's Signature_____

Address_____

Witnesses :_____

Address:_____

_____

The above said TENDER is hereby accepted by me on behalf of the MUNICIPAL CORPORATION BHOPAL

The_____2013_____

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* To be expressed in words and figure)

SECURITIES

Name	Address	Occupation or Profession	Remarks

CONDITIONS OF CONTRACT :

1. The person(s) whose TENDER may be accepted (herein after called the contractor (s) shall within ten days of the receipt by him/them of the notification of the acceptance of his/their TENDER deposit with the Commissioner sum equal to five percent of the sum specified in the TENDER either in cash or in form of Government Securities or Interest Bearing Securities. All damages to be borne, or other sums of Money payable by the Contractor(s) to the Commissioner, MUNICIPAL CORPORATION BHOPAL, under the terms of this contract may be deducted from or paid by the sale of sufficient part of his/their security deposit or from the interest arising there from or from any sums which may be due to or may become due to the Contractor (s) by the Commissioner, BHOPAL on any account whatsoever in the event of his/their Security Deposit being reduced by reason of any deductions or sale as aforesaid or by reason of forfeiture under clause 13, the contractor (s) shall within ten days thereafter make good in cash or in the form of Government Securities or Interest Bearing Securities as aforesaid any sum or sums which may be necessary to make the amount of deposit equal to five percent of the sum specified in the TENDER.

   The Contractor (s) is/are to provide everything of every sort and kind (with the exception noted in the schedule attached) which may be necessary and requisite for the due and proper execution of the several works including in the contract according to the true intent and meaning of the drawings and specification taken together, which are to be signed by the Commissioner MUNICIPAL CORPORATION BHOPAL (hereinafter called the Commissioner) and the contractor(s) whether the same may be or may not be particularly described in the specification or shown on the drawings, provided that the same are reasonable and obviously to be inferred there from and in case of any discrepancy between the drawings and the specification the Commissioner is to be decide which shall be followed.

2. The contractor (s) is/are to set out the whole of the works in conjunction with an officer to be deputed by the Commissioner and during the progress of the works the amount on the requisition of the Commissioner any errors which may arise therein and provide all the necessary labour and

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materials for so doing. The contractor (s) is/are to provide all plant, labour and materials with the exceptions noted in the scheduled attached, which may be necessary and required for the work. All materials and workmanship are to be the best of their respective kinds. The contractor (s) is/are to leave to works in all respects clean and perfect and the completion thereof.

3. Complete copies of the drawings and specifications signed by the Commissioner are to be furnished by him to the contractor(s) for his/their own use and the same or copies thereof are to be kept on site in-charge of the contractor(s) agent who is to be constantly kept on the site by the contractor(s) and to whom the instructions can be given by the Commissioner. The contractor (s) is/are not to sublet the works or any part thereof without the consent in writing of Commissioner.

4. Commissioner is to have at all times access to the works which are to be entirely under his control. He may require the contractor(s) to dismiss any person in the contractor(s) employ upon the works who may be incompetent or misconduct himself and the contractor(s) is/are forthwith to comply with such requirement.

5. The contractor(s) is/are not to vary or deviate from drawings or specifications or execute any extra work of any kind whatsoever unless upon the authority of Commissioner to be sufficiently shown by any order in writing by any plan or drawings expressly given and signed by him as an extra or variation or by any subsequent written approval signed by him. In cases of daily labour all vouchers for the same are to be delivered to the Executive Engineer or the Officer In-charge at least during the week following that in which the work may have been done and only such day work is to be allowed for as such as may have been authorized by Commissioner to be so done unless the work cannot from its character be properly measured and valued.

6. Any authority given by the Commissioner for any alterations or additions in or to work is not to violate the contract but all additions, omissions or variations made in carrying out the works are to be measured and valued and certified by the Commissioner and added to or deducted from the amount of the contract, as the case may be, at rates in forces in the Works Department, in such cases in which rates do not exist, Commissioner, will fix the rates to be paid.

7. All work and materials brought and left upon the ground by the contractor(s) or his/their orders for the purpose of forming part of the works are to be considered to be the property of Commissioner of MUNICIPAL CORPORATION BHOPAL and the same are not to be removed or taken away by the Contractor(s) or any other person without the special license and consent in writing of Commissioner but Commissioner, MUNICIPAL CORPORATION BHOPAL is not be in any way answerable for any loss or damage which may happen to or in respect of any such work or materials either by the same being lost or stolen or injured by weather or otherwise.

8. The Executive Engineer in charge of this work or Commissioner shall have full power to require the removal from the premises of all materials which in his opinion are not in accordance with the specification and in case of default Commissioner is to be at liberty to employ other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Executive Engineer is also to have full power to require other proper materials to be substituted and in case of default Commissioner may cause the same to be supplied and all costs which may attend such removal and substitution are to be borne by the contractor(s).

9. If in the opinion of Commissioner any of the works are executed with improper materials or defective workmanship, the contractor(s) is/are when required by Commissioner forthwith to re-execute the same and to substitute proper materials and workmanship and in case of default of the contractors in so doing within a week COMMISSIONER is to have full power to employ other persons to re-execute the work and the cost thereof shall be borne by the contractor(s).

10. Any defects, shrinkage or other faults which may appear within twelve months from the completion of the works arising out of defective or improper materials or workmanship are upon the direction of the Executive Engineer to be amended and made good by the Contractors at his/their own cost unless Commissioner shall decide that he/they ought to be paid for the same and in case of default the MUNICIPAL CORPORATION BHOPAL may recover from the contractor(s) the cost of making good the works.

11. From the commencement of the works to the completion of the same, they are to be under the contractor(s) charge. The contractor(s) is/are to be held responsible for and to make good all injuries, damages and repairs occasioned or rendered necessary to the same by fire or other causes and they are to hold the MUNICIPAL CORPORATION BHOPAL harmless from any claim for injuries to persons or for structural damage to property happening from any neglect,

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default, want of proper care or misconduct on the part of the contractor(s) or of any one in his/their employ during the execution of the works.

12. Commissioner to be have full powers to send workmen upon the premises to execute fitting and other works not included in the contract for whose operations the contractor(s) is/are to afford every reasonable facility during ordinary working hours, provided that such operations shall be carried on in such a manner as not to impede the progress of the work included in the contract but the contractor(s) is/are not to be responsible for any damage which may happen to or to be occasioned by any such fittings or other works.

13. The works comprised in this TENDER are to be commenced immediately upon receipt of the order of commencement given in writing by Commissioner when possession of the site can be had. The whole work including all such additions and variations as aforesaid (but excluding such, if any, as may have been postponed by an order from Commissioner) shall be completed in every respect within completion period and if from any case what so ever other than willful obstruction or default on the part of Commissioner or his staff and except as hereinafter provided in the whole of such work shall not be finished to the satisfaction of Commissioner within the said period, the contractor(s) shall forfeit to the MUNICIPAL CORPORATION BHOPAL from his/their security deposit by way of ascertained and liquidated damages for each default and not by way of penalty and the sum of Rs. 20000 per day for every complete day of such default. Provided that the entire amount of damages to be forfeited under the provisions of this clause shall not exceed five percent of the estimated value of the whole work as shown in the TENDER.

Provided never the less that if the contractor(s) shall be of the opinion that he is/they are entitled to any extension of time on account of the works being altered, varied or added to or an account of any delay by reason of any increment whether or cause not under the control of the contractor(s) in consequence of orders to that effect from Commissioner himself which orders Commissioner is to hereby empowered to give them in cases any or either of such cases it shall be competent for Commissioner by an order in writing to extend the aforesaid period for final completion by such period or periods, as he shall deem reasonable and the contractor(s) is/are to complete the works within such extended period or periods as aforesaid. Provided that the contractor(s) shall not be entitled to any extension of time unless he/they within three days after the happening of the event in respect of which he/they shall consider himself/themselves entitled to any extension given to Commissioner written notice of such claim to any extension of time and of the ground or grounds and of the amount thereof unless in any cases Commissioner shall in his discretion dispense with such notice and certify for an extension of time. Never-the-less and in case of any extension of time, the aforesaid provisions with amount for damage in default of due completion shall apply in case of non-completion of the works within the extended time. Provided that the contractor(s) shall not be entitled to any extension of time in respect of the extra work involved in the extra depth of foundation mentioned in clause 5.

14. If the contractor(s) shall become bankrupt or compound with or make any assignment for the benefit of his/their creditors or shall suspend or delay 'the performance of his/their part of the contract (except on account of causes mentioned in clause 13 or in consequence of not having proper instructions, for which the contractor(s) shall have duly applied), Commissioner may give to the contractor(s) or his/their assignees or trustee, as the case may be, notice requiring the work to be proceeded with & in case of default on the part of the contractor(s) or his/their assignees or trustee for a total period of seven days, it shall be lawful for Commissioner to enter upon and take possession of the work and employ any other person or persons to carry on and complete the same and to authorise him or them to use the plant, materials and property of the contractor(s) upon the works and the costs and the charges incurred in any way in carrying on and completing the said works are to be paid Commissioner by the contractor(s). Commissioner shall be final authority to determine the amount spend to complete the unfinished work. The certificate of Commissioner as to the value of the balance work done shall be final and conclusive against the contractor

15. The contractor(s) shall be paid the running payment according to the schedule of running payment agreed to at the time of award the contract on the completion of each calendar month commencing from the day of work order a sum of 90% of total value of work done.....since the last payment according to the certificate of Commissioner when the works shall be completed, the contractor(s) is/are to be entitled to receive one moiety of the amount remaining due according to the best estimate of the same that can be made and the contractor(s) is/are to be entitled to receive the balance of all moneys due to or payable to him/them under or by virtue of the contract within twelve months from the completion of the works.

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Project Manager
JNNURM (Water Supply Project)
Municipal Corporation, Bhopal

Provided always that no final or other certificate is to cover or relieve the contractor(s) from his/their liability under the provision of clause 10 whether or not the same be notified by Commissioner at the time or subsequently to be the granting of any such certificate.

16. A certificate of Commissioner or an award of the referee hereinafter referred to, as the case may be showing the final balance due to or payable to the contractor(s) it to be conclusive evidence of the works having been duly completed and that the contractor(s) is/are entitled to receive payment of the final balance, but without prejudice to the liability of the contractor(s) under provision of clause 10.

ARBITRATION CLAUSE

17. Except as otherwise provided in this contract all questions and disputes relating to the meaning of the specifications design, drawings and instructions herein before mention and as to think whatsoever, in any way, arising out of or relating to the contract, design, drawings , specifications, estimates, concerning the works, or the excavation or failure to exclude the same, whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the Commissioner, MUNICIPAL CORPORATION BHOPAL shall give his written instructions and /or decisions within a period of 60 days of such request. This period can be extended by a mutual consent of the parties.

Upon receipt of written instructions or decisions, the parties shall promptly proceed without delay to comply such instructions or decisions. If Commissioner, MUNICIPAL CORPORATION BHOPAL fails to give his instructions or decisions in written within a period of 60 days or mutually agreed time after being requested or if the parties may within 60 days prefer and appeal to the Superintending Engineer Directorate Urban Administrative & Development Bhopal who shall afford an opportunities to the parties of being heard and to offer evidence in support of his appeal. The Superintending Engineer Directorate Urban Administrative & Development Bhopal will give his decision within 90 days. If any party is not satisfied with the decision of the Superintending Engineer Directorate Urban Administrative & Development Bhopal he can refer such dispute for arbitration to the M.P. Arbitrator Tribunal governed as per The MP Madhyastha Abhikaran Adhiniyam, 1996

18. If at any time before or after the commencement of the work, MUNICIPAL CORPORATION BHOPAL shall for any reason whatsoever.

a) Cause alternation, omissions or variations in the drawings and specifications involving any curtailment of the works as originally contemplated; or

b) Not required the whole of work as specified in the TENDER to be carried out:

The contractor(s) shall have no claim to any payment or compensation whatsoever on account of any profit or advantage which he/they might have derived from the execution of the work in full as specified in the TENDER but which he/they did not derive in consequence of the curtailment of the works by reason of alternations, omissions or variations or in consequence of the full amount of the work not having been carried out.

The contractor(s) shall not be entitled to compensation for any loss sustained by him/them by reason of his/their having purchased or procured any materials or entered into any engagements or made any advance to labour or taken any other preliminary or incidental measures on account of or with a view to the execution of the works or the performance of the contract.

Dated:.....2013

Signature of Contractor.

The above Tender is hereby accepted by me on behalf of the Municipal Corporation BHOPAL dated the _____ day of _____

Commissioner
Municipal Corporation Bhopal

JNNURM (Water Supply Project)
Municipal Corporation, Bhopal

Tega Industries Ltd.
Authorised Signatory

1.0 GENERAL GUIDANCE AND RULES FOR CONTRACTORS

1.01 Contractors fulfilling the necessary eligibility criterion shall only be eligible to submit the TENDER.

1.02 TENDER must be submitted in online form for "Lump Sump Contract" duly filled and digitally signed in as per instruction contained in this TENDER notice and in the guideline which are attached with this NIT.

1.03 Lump sump TENDER shall be inclusive of all the items of works.

1.04 The lump sump rate should be expressed both in words and in figures. The Break-up Schedule for making RA bills payment is enclosed with this TENDER document.

1.05 The contractor shall have to make the desired and satisfactory arrangement from time to time for completion of work within time schedule. In case of labour strike or lock out or any such other matter at the work site or in his labour camp etc. the department shall not entertain any claim of the contractor whatsoever for closure, stoppage or delay or holding up etc. of the work and the contractor shall be liable for payment for item of work executed by him as per the approved billing breakup only as per contract agreement. It shall be clearly understood that no other claim, compensation or charges shall be liable to be considered for payment to the contractor due to any such reasons.

1.06 The rates quoted by the contractor should be firm without any escalation and shall not be altered by the contractor during the term of contract and no escalation charges etc. shall be payable at all what so ever conditions may be. The Rates shall be exclusive of excise duty, the certificate for the exemption of excise duty shall be provided to the Contractor by District Collector as per prevailing norms. MUNICIPAL CORPORATION BHOPAL shall extend all necessary help to get the certificate at the earliest..

1.07 No lead of water or any other material will be paid and the tendered amount should be inclusive of all lead and lift for all the material. Similarly no payment for dewatering shall be made. The contractor should himself verify the lead for different materials before submitting his TENDER.

1.08 TENDER of any contractor who proposes any addition or alteration to any of the condition laid down is liable to be rejected.

1.09 Commissioner, MUNICIPAL CORPORATION BHOPAL reserves the right for accepting TENDER for the whole work or part of it or distributing the work between one or more BIDDERs.

1.10 Accepting authority does not bind itself to accept the lowest or any TENDER and may reject TENDERs without assigning any reasons thereof.

1.11 The general specification for the work shall be as per the following and shall be followed by the contractor in the order of priority as given below,

(i) Manual on W.S. and Treatment (latest edition) by C.P.H.E.E.O. Ministry of Urban Development, Govt. of India, New Delhi with upto date amendments.

(ii) Relevant I.S. Specifications with upto date amendments.

(iii) Specifications as detailed under this contract and in the drawing etc.

(iv) Specifications as may be given in writing by the Engineer-in-charge from time to time.

(v) M.P. P.H.E.D. Specification with upto date amendments.

(vii) National Building code of India, Latest edition.

(Nothing As per to above shall however curtail the right of the Engineer-in-charge to alter the specification for any part or whole of the work, if he considered it necessary in the interest of the work, on all matters where there is difference of opinion between the contractors and the Executive Engineer, the matter will be referred to Commissioner, MUNICIPAL CORPORATION BHOPAL, whose decision will be final conclusive and binding to the contractor.

1.12 Specifications and schedule of works minutes and decision of Pre Tender meeting amendments short NIT/ detail NIT and after negotiation etc will also form part of the agreement.

1.13 Not more than one TENDER shall be submitted by a contractor or by a firm of contractor.

1.14 No two or more concerns in which an individual is inducted as proprietor and/or a partner shall TENDER for the same work. If they do so, all such TENDERs are liable to be rejected.

Project Manager
(NNUR... Water Supply Project)
Municipal Corporation, Bhopal

2.0 SUBMISSION OF TENDERS :

2.01 Earnest Money :

No TENDERs shall be received without a deposit of earnest money as shown in column no. 3 of NIT and specified under, which shall be returned to unsuccessful TENDERs on the rejection of their TENDERs by the competent authority and will be retained from the successful BIDDERs as part of the security deposit. Scanned copy of same Earnest Money Instrument should uploaded online & Original Copy must be submitted physically one day prior to online opening of EMD envelope.

2.02 Form of Earnest Money :

Where the amount of Earnest Money to be deposited is more than Rs. 10000/- the amount would be deposited in the Treasury/State Bank of India in favour of Commissioner, MUNICIPAL CORPORATION BHOPAL and the challan should be enclosed with the TENDER. If however, instead of depositing the earnest money in cash in Treasury a contractor wishes to deposit the same in any of the following forms, he would be permitted to do so:

(a) National Savings Certificates.

(b) Approved interest bearing securities.

(c) Post Office cash certificate.

(d) 13 years National Savings Certificate.

(e) All Small Savings Securities and Post Office Savings Bank Accounts Duly pledged to Government.

(f) National Savings Certificates duly hypothecated in the name of Commissioner, MUNICIPAL CORPORATION BHOPAL .

(g) Units of Unit Trust of India.

(h) Demand Draft of State Bank of India or Scheduled banks.

(i) Debentures of M.P. Housing Board, as approved by M.P. F.D. No. 1319/2306/IV-R-V/5/75 dated 17.10.1985.

(j) Bank Drafts issued by big urban banks whose working capital exceed Rs. 5 crores and by big urban banks whose working capital exceed Rs. 5 crores and by 'A', 'B' & 'C' class central co-operative Banks, Non-Schedule State Co-operative Banks subject to the condition that the draft are encashed by accepting authority as soon as they are received and contracts are allotted only after the encashment of draft as per M.P.F.D. No. f/2/18/77/R/5(iv) dtd. 13.2.86.

a. Eligibility for issuance of blank TENDER document :

TENDER documents can be received only online from https://www.mpeproc.gov.in/ by making online payment of service charges.. The last date of purchase of TENDER document is as mention in keydates. Other condition including qualification and details of work can be downloaded online directly from the M.P. UADD sub portal https://www.mpeproc.gov.in/. This NIT shall also form the part of agreement.

For details on TENDERing procedure through the electronic TENDERing system, please refer to "Guidelines for Using the Electronic TENDERing System" available along with the TENDER documents.

b. The Bidders if needed training are advised to get in touch with the Service Provider of the e-Procurement System for confirming the time and date for their training session. For further information/ details contractors may contact Nodal officer: Mr. Nand Kishore Brahme , State IT center, 2nd floor,47-Arera Hills Bhopal-462011.email: brahme@mpsedc.com, Tel: 0755-2518500/2518609. Service provider Tata Consultancy Services & Antares Systems Ltd. email ID : eproc_helpdesk@mpsdc.gov.in. Toll free nos.: 18002745454, 18002748484. Mob.08965022417, 08965065346, 0755-6500102.

2.04 Earnest Money in separate covers :

The Earnest Money in one of the prescribed forms should be produced/ sent separately and should be kept in the cover containing TENDER. If the earnest money is not found in accordance with the prescribed mode TENDER shall be returned unopened to the BIDDER.

2.05 Security Deposit :

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The Security Deposit shall be five percent (5%) of the amount of contract. The security deposit will be deducted from each RA bill payable to the Contractor. The security deposit shall be refunded to the Contractor without any interest after 12 months of the date of completion.

2.06 TENDER Submission

The Tender data should be filled and the Tender seals (hashes) of all the envelops and the documents which are to be uploaded by the Bidders should be submitted online up to as per time schedule (Key dates). The Bidders shall have to submit their Tenders online (decrypt and encrypt the Tenders) and upload the relevant documents from as per time schedule (key dates).

TENDER must be submitted in three sealed envelopes online & 2 envelope i.e., Envelope 'A' & 'B' physically as below,

ENVELOPE -A The first online envelope shall contain the details of Earnest Money (scanned copy of the Physical Earnest Money). The physical earnest money in original copies which is to be submitted manually in physical envelop-A and should reach Commissioner, **MUNICIPAL CORPORATION BHOPAL** as per date and time mentioned in the Online Notice.

ENVELOPE-B The Second Online envelope shall contain the scanned copy of terms and conditions and all the technical details and specifications of the proposed work. Alongwith following documents to be submitted online in Envelope "B".

1. Experience certificate of successful completion of work of same nature in contractor's/firm's/company's own name indicating agreement no., work order no. and date, amount of contract, stipulated period of completion, actual period of completion during last seven years. An officer not below the rank of Executive Engineer should issue the certificate.
2. The details of works in hand indicating name of work, Agreement no., work order no., and date, amount of contract, period of completion, value of work and balance work in hand with details of work on the date of submission of TENDER.
3. Valid registration certificate in appropriate class in M.P. PWD..
4. Financial turn over works during last five financial years.
5. Proof of registration in commercial tax department.
6. Current Income Tax clearance certificate.
7. List of plants and machineries for successful completion of the works.
8. Registered deed of jointventure(If the TENDER submitted by Jointventure firm)

Note : Please note that all the above documents must be uploaded online as well as physical documents should be provided in physical form in Envelope 'B'.

ENVELOPE-C This Envelope shall contain only the Lump-sum offer. The BIDDER shall have to duly fill their Lump-sum offer in appropriate online form meant for it.

In case price-Tender/Financial proposal submitted manually, the Tender shall be out right rejected.

If any BIDDER stipulated any condition other than the common conditions agreed to in the pre-Tender meeting, his TENDER shall be rejected out right and his TENDER shall be ignored. Each BIDDER shall supply the name, residential address and place of business of the person or persons giving TENDER and shall be signed only by the BIDDER with his usual signature.

2.07 TENDER submitted by consortium of BIDDERs /Joint Venture

The TENDER can be submitted by consortium or group of BIDDERs for experience and financial capacities and as per enclosed format. In this the Consortium / Joint venture / SPV has to be formed prior to the purchase of the Tender document. The details of which shall be annexed with the TENDER. In the event of Consortium, maximum of 3 firms shall be allowed to form the joint venture. The lead member shall fulfill minimum of 50% of the eligibility criterion & other members should fulfill minimum of 26% of the eligibility criterion.

When TENDER is given by the Consortium/Joint Venture the full name of all the Partners shall be furnished. An attested copy of the constitution of firm/Partnership Deed/Deed of Joint Venture along with the and the Registration number of the firm should be furnished along with the TENDER.

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In the event of Joint Venture the JV deed shall have to be registered prior to the agreement and shall be made part of the agreement.

2.08 The BIDDERs submitting the TENDER will have to submit the salient features of the design at the time of submitting TENDER along with out line plan and section of proposed works. This information should be attached with the TENDER in the Envelope 'B'.

2.09 The detailed design and drawings for the work shall have to be submitted by the contractor(s) for scrutinizing and approval by the competent authority within fifteen days from the date of acceptance of their TENDER.

2.10 The designs will be subject to the approval of the Department and can be altered to suit the structure safety of the work and the contractor shall not make any extra claim on that account. The responsibility for design, execution, commissioning and testing to entire satisfaction of the department will however/rests solely with the contractor(s).

2.11 **Implications of submission of TENDERs :**

Contractors should get themselves acquainted with online Tendering Process. Department/ Service Provider shall not be responsible for any mistake made by the BIDDER on this account.

BIDDERs are advised to visit the sites sufficiently in advance of the date fixed for submission of TENDER. A BIDDER shall be deemed to have full knowledge of all the relevant documents and soil conditions etc. whether he inspects them or not. The submission of TENDER by a contractor implies that he has read the TENDER notice, conditions of TENDER and all other contract documents has made himself aware of the standards and procedure in this respect laid down in the relevant Indian code of practice and made himself aware of scope and specification of the work to be done and the site condition and rates of various items required for execution, he has seen the quarries with their approaches, site of work etc. and has satisfied himself regarding the suitability and availability of material. The responsibility of opening new quarries and construction and maintenance of approaches there-to shall lie wholly with the contractor. The contractor shall examine the correctness of designs, drawings and survey plans as may be supplied to him by the Department. He shall bring to the notice of the department any ambiguity before the submission of TENDER. Any claim of Contractor due to any ambiguity in Department's design after the accordance if the TENDER not be entertained.

2.12 **Income Tax Clearance Certificate:**

The BIDDER shall submit either Income Tax Clearance certificate in the form printed as Annexure-'C' or a certificate from the Income Tax Authority that the assessment is under consideration. No TENDER documents can be issued/sold to him unless such certificate is submitted.

2.13 **List of work in progress :**

Application for issue of blank TENDER forms must be accompanied by Isit of contract already held by the BIDDER at the time or submission of the TENDER in the Madhya Pradesh Public Health Engg. Deptt. and else where showing there in-

a) The amount of each contract.

b) Balance of work remaining to be done and

2.14 **Near Relative :**

The contractor shall not be permitted to TENDER for works in the Division (Responsible for award and execution of contracts) in which his near relative is posted as Divisional Accountant or an officer in any capacity between grades of the Superintending Engineer and Executive Engineer, both inclusive. He shall intimate the name of persons who are working with him in any capacity or are subsequently employed by him and who are near relative to any gazetted officer in MUNICIPAL CORPORATION BHOPAL , UADD or Secretariat, any breach to this condition by the contractor would render him liable to be removed from the approved list of contractors in the department.

2.15 **Witnessing of TENDER :**

The TENDER for the work shall not be witnessed by a contractor or contractor(s) who himself themselves has/have TENDERed for the same works. Failure to observe this condition shall render the TENDER of the contractor TENDERing as well as of/those witnessing the TENDER liable to rejection.

2.16 **TENDERs must be properly sealed :**

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TENDERs must be signed, properly sealed and sent either by registered post well in advance of the last date or handed over personally to the Executive Engineer or in his absence to the authorized person who will issue an acknowledgement in token of receipt. Unsealed TENDERs or those received after 3 PM on the due date will not be entertained.

3.0 OPENING AND ACCEPTANCE OF TENDERS :

3.01 **Time and Place of Opening:**

The envelope 'A' shall be opened online at https://www.mpeproc.gov.in/

and after finding earnest money and cost of TENDER document in order, The Envelope 'B' containing technical details and terms and conditions shall be opened as per key dates by Commissioner, MUNICIPAL CORPORATION BHOPAL at his office in the presence of the BIDDERs or their authorised agents who may choose to attend. Commissioner under unavoidable circumstances may depute another officer in his absence to receive and open the TENDERs.

3.02 The Envelope 'C' containing price Tender shall be opened by COMMISSIONER after ascertaining that Envelope 'A' and envelope 'B' are in order and fulfills the terms and conditions given in the NIT.

3.03 **Validity Period :**

TENDER shall remain open for a period of 180 days from the date of opening the TENDER i.e. the Envelope 'C' containing price Tender. In the event of BIDDERs withdrawing the offer before the aforesaid period for any reasons what so ever, his earnest money deposited with the TENDER shall be forfeited to MUNICIPAL CORPORATION BHOPAL .

4.0 RATES :

Contractors should quote his Lump-sum offer as per online Form for job as described under scope of work. The Contractor will not alter the rates quoted in the TENDER during the term of contract on any grounds whatsoever.

5.0 SPECIFICATION :

5.01 **General**

Annexed in annexure "E"

5.02 **Materials of Construction :**

All works pertaining to the TENDER shall be executed in accordance with standard specification of MP Government Works Deptt. and I.S. code of Practice. The I.S.S. will be given preference in case there is difference in MP Govt. standard specifications and I.S.S. code of practice.

5.03 **Workmanship :**

The work shall be carried out according to the specification referred to herein after and according to sound Engineering practice. The decision of the Executive Engineer in respect of workmanship shall be final. The contractor will be bound to carry out dewatering found necessary and his lumpsum rates should be inclusive of it. No payment will be made for dewatering or any other work connected with it.

5.04 **Concrete :**

All concrete work shall be carried out as per provision of IS: 456-2000 with up to date amendments. All concrete shall be mixed in concrete mixer and compacted by mechanical vibrators. Slump tests shall be carried out during concreting and samples test cubes prepared and tested in the due course. The testing will be carried out by the department. The results of the test shall confirm with the required standard and if the Engineer in-charge consider that the structural test is necessary the same shall be carried out as instructed by the Commissioner at contractor's expense and if the results of this be unsatisfactory the contractor will be bound to dismantle and reconstruct the particular portion which has given unsatisfactory test result.

5.05 **Timber :**

All timbers used for wood work must be properly seasoned.

5.06 **Materials used on the Civil Work :**

All materials should be of a quality approved by Commissioner. Rejected materials should be removed from the site immediately at the cost of the contractor.

5.07 **Tests :**

All structures will have to be tested for stability the testing shall be arranged by the contractor at his own cost, it will be the responsibility of the contractor that the structure does not leak during

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the period of first rainy season after its completion and he will make good the same and repair defective work at his own cost.

6. PAYMENTS :

6.01 Payments to the contractor will be made as per the provisions of form 'F' for the contract. The RA bills shall be submitted as per the billing break-up annexed in the TENDER.

6.02 The period of refund of security deposit will be after twelve months after the completion of the work as certified by Commissioner, MUNICIPAL CORPORATION BHOPAL. This will super cede the clause '10' of Form 'F' .

7.0 SUPPLY OF MATERIALS :

No materials will be supplied by the MUNICIPAL CORPORATION BHOPAL .

8.0 MISCELLANEOUS CONDITIONS :

8.01 **Subletting :**

The contractor shall not, assign to any other party/parties the whole or any portion of the work under the contract.

8.02 **Taxes :**

All dues regarding taxes including Income Tax, Sales Tax, Octroi duties, etc. levied on the contractor's work by Government and local bodies or private individuals will be payable by the contractors. The department will grant a certificate for the quantities actually used on the work, but will not entertain any claim on this account. 1% Karmkar Kalyan Upkar shall also be levied on all the payments.

8.03 The royalty charges for extracting minor minerals for Government work will be paid on the contractor (s) to the Collector as per rules, and the amount so paid can be refunded by the Collector according to the procedure prescribed on production of certificate from the Executive Engineer, to the effect the minor minerals extracted by the contractor have been utilized for Government work, provided if the Rules so permit. For extra minerals if any extracted by the Contractor he shall be directly responsible to the Collector, reservation of quarry sites shall not be the responsibilities of the department.

8.04 **Rules of Labour Camp :**

The contractor will be bound to follow the Madhya Pradesh Model rules relating to layout for water supply and sanitation in labour camps (vide Annexure 'A') and the provisions of the National Building Code of India, latest addition in regard to constructional practice and safety.

8.05 **Fair Wages :**

The contractor shall pay not less than fair wages to labourers engaged by him on the works (copy of rules enclosed vide Annexure 'B'.

8.06 **Work in the vicinity :**

The Executive Engineer reserves the right to take up departmentally or to award works on contract, in the vicinity without prejudice to the terms of contract.

8.07 **Best Quality of Quarries Materials :**

If in a quarry, materials o f more than one quality if found the materials of the best quality will be used as approved by the Executive Engineer.

8.08 **Removal of Undesired Persons :**

The contractor shall on receipt of the requisition from the Executive Engineer, at once remove any person employed by him on the work who, in the opinion of the Executive Engineer is unsuitable or undesirable.

8.09 **Amount due from Contractor :**

Any amount due to MUNICIPAL CORPORATION BHOPAL from the contractor on any account of the concerning work, may be recovered from him as an arrears of land revenue.

8.10 **Tools and Plants :**

The contractor shall arrange/at his own cost all tools and plants required for the proper execution of the work.

8.11 **Right to Increase/Decrease :**

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The competent authority reserves the right to increase or decrease any item or work during the currency of the contract and the contractor will be bound to comply with the order of the competent authority without any claim for compensation.

8.12 **Time Schedule :**

The work shall be done by the contractor according to the time schedule issued by the competent authority.

8.13 **Time of Contract :**

Time allowed for carrying out the work as entered in the NIT shall be strictly observed by the contractor and shall be reckoned from the date of issue of work order to commence the work.

8.14 **Payment by cheque :**

The payment will be made by crossed account payee cheques only. No bank commission charges for realizing such payments, will be done by the department. Contractor have to submit report of labour engaged to local employment office and copy of the same attached with the bill failing which no payment will be made to the contractor.

8.15 Every contractor who employed on any day of the proceeding 12 months 20 or more workers on contract work is required to obtain license from licensing officer of the area concerned as per provision obtained under sub section 4'B' of Section -II of the contract labour regulation and abolition of 1970, as per provision contained in Section -12 of the Act. No contractor shall execute any contract work without obtaining license. The technical staff shall be as per follows,

1. An Engineer or Sub Engineer may look after more than one work in the same locality but the total value of such works under him should not exceed Rs. 20.00 lakhs in the case of Engineer and 5 lakhs in the case of Sub-Engineer.
2. It is not necessary for the contractor or partner in case of firm/company who is himself an Engineer/Sub Engineer for the Supervision of the work so long as the contractor/partner does work similar to what should have been done by an employed Engineer/Sub Engineer.
3. The required retired Engineer/Executive Engineer who is holding Diploma may be treated as per with the Graduate Engineer, for the operation of the above clause.

In case the contractor fails to employ the Technical staff as aforesaid, he shall be liable to pay to the Government a sum of Rs. 1,000/- (Rs. one thousand) only for each month of default in the case of Graduate Engineer and Rs. 500/- (Rs. five hundred) only for each month of default on the case of Diploma Sub Engineer.

contravention of above is punishable and contractor is liable to be prosecuted.

8.16 The successful BIDDER is liable to produce license as and when demanded by the Executive Engineer obtained from the labour department as laid down in chapter -IV of contractor labour (Regulation and Abolition), Act, 1970.

9.0 TRANSPORTATION OF MATERIALS:

The contractor shall make his own arrangements for transportation, handling and storage of all materials to be used for the execution of the job. The MUNICIPAL CORPORATION BHOPAL is not bound to arrange for storage/transportation of any materials though all possible assistance by way of recommendations will be given if it is found necessary in the opinion of the Commissioner/Engineer-In-charge. However, if it proves in-effective the contractor shall have no claim for any compensation on that account.

10.0 AGREEMENT:

10.01 The BIDDER whose TENDER has been accepted (hereinafter referred to as the contractor) shall submit the performance security equal to 5% of the cost of TENDER in the forms as described above (EM shall form the part of Performance Security) to Commissioner and will execute the agreement in the prescribed form within a fortnight of the communication of the acceptance of his TENDER by the competent authority. Failure to do so will result in the Earnest Money being forfeited to Government and TENDER being cancelled.

10.02 **Condition Applicable for contract:**

All the conditions of the TENDER notice will be binding on the contractor and shall form part of the agreement to be executed by the contractor in addition to the conditions of the contract in the prescribed form.

(a) One graduate Engineer when the cost of work to be executed is more than Rs. 5 lakhs.

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(b) One Diploma holder Sub Engineer when the cost of work to be executed is Rs. 2 lakhs and more but not more than Rs. 5 lakhs.

(c) The Technical staff should be available at site whenever required by the Engineer-in-charge to take a instruction for compliance by the Contractor/firm.

(d) In case the contractor fails to employ the Technical staff as aforesaid Government shall have the right to take suitable remedial measures at the cost of the contractor.

(e) The contractor should give the names and other details of the Graduate Engineer/Diploma holder/Sub Engineer whom he intends to employ or who is under employment on the work at the time he commence the work.

(f) The contractor should give a certificate, to the effect the Engineer/Diploma Holder/Sub Engineer is exclusively in his employment.

11. The contractor shall make his own arrangement at his own cost for housing his staff and store for the work and Madhya Pradesh model rules relating to layout water supply and sanitation shall be followed.

12. Detailed specifications and leaf-lets if any of all items shall be submitted with the TENDER.

13.0 **INTERIM PROGRESS :**

The work shall be carried out by the contractor strictly as per the approved time schedule. Construction schedule in the form of the bar chart shall form part of the contract. In the event of unsatisfactory progress penalty up to 1/2 percent of the cost of balance work shall be imposed in addition to liquidated damages and penalty as per the relevant clause of the agreement. The interim progress shall be reviewed every fortnight. However, suitable extension of time shall be allowed to the contractor for delays on account of reasons beyond his control.

14.0 A third party inspection shall be conducted once in every three months during the concurrence of works for certifying the quality of works executed/to be executed in the contract. The authority of inspection shall be approved by MUNICIPAL CORPORATION BHOPAL . The expenses for the said inspection shall be borne by Contractor.

15. **ANNEXURES:**

Following documents Annexed with this NIT shall form a part of the contract.

Annexure	:	'A'	Model Rules Relating to labour Water Supply etc.
Annexure	:	'B'	Contract Labour Regulations.
Annexure	:	'C'	Form of Certificate of Income Tax
Annexure	:	'D'	Billing Breakup
Annexure	:	'E'	Specifications
Annexure	:	"F"	Bank Guarantee Bond.
Annexure	:	"G"	Safety Code.
Annexure	:	"H"	Affidavit Format.
Annexure	:	"I"	Envelop B Technical Proposal formats.
Annexure	:	"J"	Bill of Quantity.
Annexure	:	"K"	Letter of Acceptance format.
Annexure	:	"L"	Contract Agreement Format .
Annexure	:	"M"	Commencement of work .
Annexure	:	"N"	Prequalification criteria.
Annexure	:	"O"	Special eligibility criteria.
Annexure	:	"P"	Technical staff details.

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ANNEXURE - A

MODEL RULES RELATING TO LABOUR WATER SUPPLY AND SANITATION IN LABOUR CAMPS

*NOTE : **These model rules are intended primarily for labour camps which are not of a permanent nature. They lay down the minimum desirable standard which should be adhered to as standard for permanent or semi permanent labour camps and should not obviously be lower than those for temporary camps.***

1. **LOCATION :**

The camp should be located in elevated and well drained ground in the locality.

2. Labour huts to be constructed for one family of 5 persons each. The lay out to be shown in the prescribed sketch.

3. **HUTTING :**

The huts to be built of local materials. Each hut should provide at least 20 sq. meters of living space.

4. **SANITARY FACILITIES :**

Latrines and Urinals shall be provided at least 16 meters away from the nearest quarters separately for men and women and specially so marked on it.

5. **LATRINES :**

Pit privies at the rate of 10 users or two families per seat, separate urinals as required & part can also be used for this purpose.

6. **DRINKING WATER :**

Adequate arrangements shall be made for the supply of drinking water. If practicable filtered and chlorinated supplies shall be arranged, when supplies are from intermittent sources covered storage tank shall be provided with a capacity of five liters a person per day. Where the supply is to be made from a well it shall conform to the sanitary standard laid down in the report of the Rural sanitation committee. The well should be at least 30 meters away from any latrines or other source of pollution. If possible hand pump should be installed for drawing the water from well. The well should be effectively disinfected once every month and the quality of the water should be got tested from the nearest Public Health Engg. Laboratory between each work of disinfections.

7. **BATHING AND WASHING:**

Separate bathing and washing places shall be provided for men and women for every 25 persons in the camp. There shall be one gap and space of 2 sq. meters for washing and bathing. Proper drainage for the water should be provided.

8. **WASTE DISPOSAL:**

Dustbin be provided at suitable places in camp and the residents shall be directed to throw all rubbish into those dustbins. The dustbins shall be provided with cover. The contents shall be removed every day and disposed off by trenching.

9. **MEDICAL FACILITIES:**

(a) Every camp where 1,000 or more persons reside shall be provided with whole time doctor and dispensary. If there are women in the camp a whole time nurse shall be employed.

(b) Every camp where less than 1,000 but more than 250 persons reside shall be provided with a dispensary and a part time nurse/mid wife.

a. If there are less than 250 persons in any camp a first aid kit shall be maintained in charge of whole time persons, trained in first aid.

b. All the medical facilities mentioned above shall be for all residents in the camp including dependent of the worker, if any free of cost.

10.0 **SANITARY STAFF:**

For such labour camp there should be qualified sanitary inspector and sweepers should be provided in the following scale:-

1. For camps with strength over 200 but not exceeding 500 persons one sweeper for every 75 persons above the first 200 for which 3 sweepers shall be provided.

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2. For camps with a strength over 500 persons one sweeper for every 100 persons above first 500 for which 5 sweepers should be provided.

ANNEXURE : B

CONTRACT LABOUR REGULATION

(a) The contractor shall pay not less than fair wages to labourers engaged by him in the work.

'Fair Wages' means wages whether for time or piece work as notified on the date of Inviting TENDERs and where such wages have not been so notified the wages prescribed by the Labour department for the division in which the works is done.

(b) The contractor shall, not with standing the provisions of any contract to the contrary, shall ensure the payment of fair-wage to laborers indirectly engaged on the work including any labour engaged by his sub contractors in connection with the said work as if laborers had been immediately employed by him.

(c) In respect of all labour directly or indirectly employed on the works or the performance of his contract, the contractor shall comply with or cause to be compiled with the labour Act in force.

(d) The Executive Engineer/Sub Divisional officer shall have the right to deduct from the money due to the contractor any sum required or estimated to be required for making good the loss suffered by a workers by reason of non fulfillment of the conditions of the contract for the benefit of the workers non-payment of wages or of deductions made from his or their wages which are not justified by their terms of the contract or non-observance of regulations.

(e) The contractor shall be primarily liable for all payments to be made under and for the observance of the regulations aforesaid without prejudice to his right to claim identify from his sub-contractors.

(f) The regulations aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract.

(g) The contractor shall obtain a valid license under the contract (regulations and Abolition) Act, in force and rules made there under by the competent authority from, time to time before commencement of work, and continue to have a valid license until the completion of the work.

Any failure to fulfill this requirement shall attract the penal provisions of this contract arising out of the resulted non-execution of the work assigned to the contractor.

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ANNEXURE : C

FORM OF CERTIFICATE OF INCOME TAX TO BE SUBMITTED BY CONTRACTOR TENDERING FOR WORK COSTING RS. 2.00 LACS OR MORE

(a) Name and style of the (company, firm, H.U.F. or individual) in which the applicant assessed to income Tax and address for purpose of agreement.

(b) The Income Tax Circle/Ward/District/in which the applicant is assessed to Income Tax.

(c) Following particulars concerning the last Income Tax assessment made.

(1) Permanent Account number (PAN) of the Assessment.

(2) Assessment of total income assessed.

(3) Assessment year and accounting year.

(4) Amount of tax assessed I.T., S.T., E.I.T., B.P.T.

(5) Amount of tax paid I.T., S.T., E.P.T., B.P.T.

(6) Balance being tax not yet paid and reasons for such arrears.

(7) Whether any attachment or certificate proceedings pending in respect of the arrears.

(8) Whether the company or firm or H.U.F. on which the assessment was made was been or is being liquidated, wind up, dissolved, partitioned.

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ANNEXURE : D

BILLING BREAK-UP

For Water Treatment plant/clear water pump house/ sump well (16.70% of the total sanctioned cost)

1 5% shall be payable to the Contractor after approval of Designs and drawings.
2 25% shall be payable to the Contractor on completion of excavation, PCC and foundation in all respect up to G.L. on pro-rata basis.
3 65% shall be payable to the Contractor on pro-rata basis as per the progress of Civil Works.
4 5% shall be payable to the Contractor after completion of the whole work and trial run for a period of 3 months including training the staff of MUNICIPAL CORPORATION, for running and maintenance.

For Pipeline (Raw/ Clear water pumping main and Feeder Main) (16.25 % of the total sanctioned cost)

1 5% shall be payable to the Contractor after approval of designs and drawings.
2 50% shall be payable to the Contractor on supply of pipes.
3 15% shall be payable to the Contractor after completion of laying of 50% length of pipeline in all respect on pro-rata basis
4 20% shall be payable to the Contractor after completion of laying of 100% length of pipeline in all respect on pro-rata basis.
5 5% shall be payable on Successful Testing of the pipeline.
6 5% shall be payable after completion of the whole work and trial run for a period of 1 month.

For OHT (21.00 % of the total sanctioned cost)

1 5% of the Sanctioned cost shall be payable to the Contractor after approval of designs and drawings.
2. 10% of the Sanctioned cost shall be payable to the Contractor after completion of excavation .
3. 10% of the Sanctioned cost shall be payable to the Contractor after completion of foundation .
4. 20% of the Sanctioned cost shall be payable to the Contractor after construction of staging.
5 10% of the Sanctioned cost shall be payable to the Contractor after laying of lower dome.
6 10% of the Sanctioned cost shall be payable to the Contractor after erection of side walls.
7 10% of the Sanctioned cost shall be payable to the Contractor after laying of top dome.
8 10% of the Sanctioned cost shall be payable to the Contractor after fitting of all pipe and valves etc.
9 10% of the Sanctioned cost shall be payable to the Contractor after plastering, painting, water tightness testing etc. complete.
10 5 % of the Sanctioned cost shall be payable to the Contractor after 3 months of successful completion of the work.

For Intake well and raw water pump house (2.20 % of the total sanctioned cost)

1 5% shall be payable to the Contractor after approval of Designs and drawings.
2 25% shall be payable to the Contractor on completion of excavation, PCC and foundation in all respect up to G.L. on pro-rata basis.
3 65% shall be payable to the Contractor on pro-rata basis as per the progress of Civil Works.
4 5% shall be payable to the Contractor after completion of the whole work and trial run for a period of 3 months including training the staff of MUNICIPAL CORPORATION, for running and maintenance.

For Supply and installation of Raw and Clear water pumps, motor HT Feeder (7.85 % of the total sanctioned cost)

1 5% shall be payable to the Contractor after approval of Designs and drawings.
2 65% shall be payable to the Contractor on supply of all the electro-mechanical items at site.
3 25% shall be payable to the Contractor on erection and complete fitting of motors and pumps at site.
4 5% shall be payable to the Contractor after completion of the whole work

For Distribution Network (31.40 % of the total sanctioned cost)

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1 5% shall be payable to the Contractor after approval of designs and drawings.
2 50% shall be payable to the Contractor on supply of pipes.
3 15% shall be payable to the Contractor after completion of laying of 50% length of pipeline in all respect incl. road restoration on pro-rata basis
4 15% shall be payable to the Contractor after completion of laying of 100% length of pipeline in all respect incl. road restoration on pro-rata basis.
5 10% shall be payable on Successful Testing of the pipeline.
6 5% shall be payable after completion of the whole work and trial run for a period of 1 month.

For House Service connection/Bulkmeters (4.60 % of the total sanctioned cost)

1 5% shall be payable to the Contractor after approval of Designs and drawings.
2 50% shall be payable to the Contractor on supply of material (complete set for one connection as required incl. pipe, meter and all other accessories).
3 35% shall be payable to the Contractor after completion of house connection in all respect incl. road restoration on pro-rata basis
4 10% shall be payable to the Contractor after completion & Successful Testing of the connection.

Note -

In case of any increase/decrease in length of distribution pipes for 100% coverage of the Municipal area the payment will be adjusted as per the latest SOR issued by Department of Urban Administration and Development, Madhya Pradesh without any escalation

Operation and Maintenance :

The successful bidder shall carry put the operation and maintenance of the project facilities for 10 years after the successful commissioning of the project. During O&M the scope of Contractor shall be as SLOU annexed with this document. Also the staffing pattern is also appended.

Municipal Corporation, Bhopal shall pay 3.50% of the sanctioned Tender cost to the bidder in the first year for Operation and Maintenance. From second year upto tenth year this amount shall be increased by 5% per annum as described below. The payment against the O&M shall be made every year on satisfactory upkeep and running of the system.

Year of Operation and Maintenance	% of the Sanctioned Tender Cost for To be paid for Operation and Maintenance of the project per annum
1st Year	3.50
2nd Year	3.68
3rd Year	3.86
4th Year	4.05
5th Year	4.25
6th Year	4.47
7th Year	4.69
8th Year	4.92
9th Year	5.17
10th Year	5.43
Total	**44.02**

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ANNEXURE : E

BRIEF SPECIFICATIONS

SPECIFICATIONS FOR PIPE LINES

1. Excavation for Pipe Line Trenches

1.1. Excavation for Pipe Line Trenches

The excavation in hard rock will have to be carried out either by controlled blasting or chiseling, wedging or by mechanical means and the tendered rate is supposed to cover cost of all such means.

1.2. Site Clearance

The pipe line alignment shall be cleared of all bushes, shrubs, roots, grass, weeds and if required trees, coming in the alignment of pipe line in the trench width portion. The rates for excavation shall cover all such site clearance work and no extra payment will be allowed on this account.

1.3. Alignment marking

After the work site is cleared as above, pipe line alignment with required trench width shall be marked on the ground with apex points, curves etc, as shown on the drawings or as directed by the Engineer-in-Charge in charge for the stretch where the work is to be started. The contractor shall provide all labour, survey instruments, and materials such as strings, pegs, nails, bamboos, stones, mortar, concrete etc. required for setting out and establishment of bench marks. The contractor shall be responsible for the maintenance of bench marks and other marks and stakes as long as they are required for the work in the opinion of the Engineer-in-Charge.

1.4. Working survey

Working survey of the pipeline alignment shall be carried out by the contractor before start of the excavation work. The contractor shall provide all the instruments such as leveling instruments, steel tape, ranging rods, strings, pegs etc for carrying out the survey. Based on the working survey, the alignments, L-section (depth of laying), grade, and location of specials, valves and chambers shall be finalized and got approved from the engineer in charge. The gradient and alignment shall be such that minimum horizontal and vertical bends shall be required.

1.5. Use of Machinery :

All excavations shall be carried out by mechanical equipments / machinery unless, in the opinion of the Engineer-in-Charge, the work involved and time schedule permit manual excavation.

1.6 Trench Width and Depth :

All buried pipelines shall be minimum 1 meter +/- 0.2 mtr below ground level to maintain proper grade unless other depths are approved by the engineer in charge. The trench width for respective pipe diameters permissible as required under respective IS code for Pipeline laying and installation.

The trench width shall be constant through out the trench depth, which will provide a clearance of about 0.30 m on either side of the pipe line.

The contractor may, for the facility of work or similar other reasons, excavate and also backfill later, if so approved by the Engineer-in-Charges, at his own cost, outside the allowable trench width specified above. Should any excavation be taken below the specified trench bottom, contractor shall fill it up to required level, at his own cost, with the same material available at the trench bottom including watering and compaction.

The excavation shall be taken down to such depths as shown in drawings. Excavation for extra depth equal to the thickness of proposed pipe bedding shall be done below pipe soffit level for providing bedding below pipe line wherever bedding is required. The trench bottom shall be excavated to proper grade as shown on drawings. The contractor shall provide site rails and leveling instruments required for checking the grade during excavation, bottom bedding and pipe laying Projections in rock excavation shall be removed by chipping.

The contractor shall carryout extra excavation at the pipeline joints to be welded in the trench, as required (minimum 0.6 m deep and 0.9 m lengthwise, all around the pipe), for facilitating proper

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welding of the bottom joint from out side. The work of trench excavation should be commensurate with laying and jointing of the pipe line. It should not be dug in advance for a length greater than 500 m ahead of work of laying and jointing of pipeline unless otherwise permitted by the Engineer-in-Charge.

The minimum cover on pipe is to be maintained 1 meter+/- 0.2 mtr. However the cover on pipe may be modified to suite gradients and site conditions as per direction of Engineer-in-Charge.

1.7 Barricading and Guarding:

To protect persons from injury and to avoid damage to property, adequate barricades, construction signs, red lanterns and guards as required shall be placed and maintained

During the progress of work, till filling of the trenches after pipes are laid and jointed. The lighting, barricading, guarding of the trenches and the maintenance of watchman shall be done by the contractor at his cost.

All precautions shall be taken during excavation and laying operation to guard against possible damage to any existing structures, under ground cables, pipe lines of water, gas, sewage etc. Any damage done to such properties will have to be repaired / rectified by the contractor at his cost. The Contractor has to ensure the following:

- safety protections as mentioned above have to be incorporated in the work process
- hindrances to the public have to be minimized
- the trench must not be eroded before the pipes are laid
- the trench must not be filled with water when the pipes are laid
- the trench must not be refilled before laying of the pipes

The bed for the laying of the pipes has to be prepared according to the L-Section immediately before laying of the pipes.

1.8. Reuse of surface material

All surface materials, which in the opinion of the Engineer-in-Charge, suitable for reuse in restoring the surface shall be kept separate from the general excavation material, as directed by the Engineer-in-Charge.

1.9. Stacking of excavated material

All excavated materials shall be stacked in such a manner that it does not endanger the work and avoids obstructing foot paths and roads. Hydrants under pressure, surface boxes, fire and other utility controls shall be left unobstructed and accessible until the work is completed. Gutters shall be kept clean or other necessary provisions made for street drainage and natural water courses shall not be obstructed. All the excavated material shall be the property of the Employer and shall be stacked or disposed off as directed by the Engineer-in-Charge.

1.10. Maintenance of traffic

The work of excavation and pipe laying shall be carried in such a manner that it causes the least interruption to traffic and the road / street may be closed in such a manner that it causes the least interruption to the traffic. Where it is necessary for traffic to cross open trenches, suitable bridging arrangement shall be provided. When the street is closed for traffic, suitable signs indicating that street is closed shall be placed and necessary detour signs for proper maintenance of traffic shall be provided.

1.11. Structure protection

Temporary support, adequate protection and maintenance of all underground and surface structures, drains, sewers and other obstructions encountered in the progress of work shall be furnished under the direction of the Engineer-in-Charge. The structures which have been disturbed shall be restored upon completion of work.

1.12. Protection of property

Trees, shrubbery fences, poles and all other property shall be protected unless their removal is allowed by the Engineer-in-Charge. When it is necessary to cut roots and tree branches, such cutting shall be done under the supervision and direction of the Engineer-in-Charge.

1.13. Avoidance of existing services

As far as possible, the pipeline shall be laid below existing services, such as water and gas pipes, cables, cable ducts and drains but not below sewers. Excavation of the trenches shall be carried out to the required depth accordingly. If it is unavoidable, the pipeline shall be suitably

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protected and lesser trench depth in such cases can be allowed. A minimum clearance of 150 mm shall be provided between the pipeline and such other services. When thrust or auger boring is proposed for laying pipeline across roads, railway or other utilities, larger clearance as required shall be provided. Adequate arrangements shall be made to protect and support the other services during excavation and pipe laying operations. The work shall be so carried out as not to obstruct access to the other services for inspection, repair and replacement. When such utilities are met with during excavation, the authority concerned shall be intimated and arrangements made to support the utilities in consultation with them.

1.14. Bailing out of Water

During the excavation if subsoil water is met with, contractor shall provide necessary equipment and labour for dewatering the trenches. If pumping out subsoil water is found necessary, contractor shall provide sufficient number of pumps for the same. The TENDERed rate shall cover all costs for bailing out of water including hire charges of pumps, cost of diesel and labour etc and hence, no extra payment shall be allowed.

1.15. Disposal of loose boulders etc

All loose boulders, semi detached rocks, (along with earthy stuff which might move therewith), not directly in the excavation but close to the area to be excavated, as to be liable, in the opinion of the Engineer-in-Charge, to fall or other wise endanger the workman equipments, or the work etc, shall be stripped off and removed away form the area of the excavation. The method used shall be such as not to shatter or render unstable or unsafe the portion which was originally sound and safe. The TENDERed rate is supposed to cover this job and no extra payment will be allowed on this account.

1.16. Disposal of Excavated Material

All the excavated surplus material shall be disposed off on low lying Government land or as directed by the engineer in charge.

1.17. Moorum / Sand Bedding below Pipeline

In case of hard rock and black cotton soil, before lowering of the pipes in trenches, a layer of selected moorum, available from excavated material under the same contract shall be provided below the pipe line to act as bedding. The bedding shall be compacted properly including required watering and the thickness of well compacted layer shall not be less than 150 mm. The bedding shall be provided for full trench width with proper grade as shown on drawings.

2. Refilling the trenches

2.1. Use of selected excavated material

Filling of excavated material in trenches shall be commenced as soon as the joints of pipes and specials have been tested and passed. The backfilling material shall be properly consolidated by watering and ramming, taking due care that no damage is caused to the pipes and the outer coating.

Selected surplus spoils from excavated material shall be used as backfill. Fill material shall be free from clods, salts, sulphate, organic or other foreign material. All clods of earth shall be broken or removed. Where excavated material is mostly rock, the boulders shall be broken into pieces not larger than 150 mm size, mixed with properly graded fine material consisting of murum or earth to fill up the voids and the mixture used for filling.

2.2. Filling zones

For the purpose of back-filling, the depth of the trench shall be considered as divided in to the following three zones from the bottom of the trench to its top:

Zone A:	
From the bottom of the pipe (top of bedding) to the level of the centre line of the pipe	Back-filling by hand with selected approved material available from excavation, placed in layers of 150 mm and compacted by tamping. The back-filling material shall be deposited in the trench for its full width on each side of the pipe, specials and appurtenances simultaneously. Special care shall be taken to avoid damage of the pipe and the coating or moving of the pipe.
Zone B:	

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From the level of the centre line of the pipe to a level 300 mm above the top of the pipe	Back-filling and compaction shall be done by hand or approved mechanical methods in layers of 150 mm; special care shall be taken to avoid damage of the pipe and the coating or moving of the pipe.
Zone C:	
	Back-filling shall be done by mechanical methods in 15 cm.

2.3. All excavations shall be backfilled to the level of the original ground surfaces unless otherwise shown on the drawings or ordered by the Engineer-in-Charge in Charge, and in accordance with the requirements of the specification. The material used for backfill, the amount thereof, and the manner of depositing and compacting shall be subject to the approval of the Engineer-in-Charge in Charge, but the Contractor will be held responsible for any displacement of pipe or other structures, any damage to their surfaces, or any instability of pipes and structures caused by improper depositing of backfill materials.

The back filled layers shall be wetted and compacted to a density of not less than 90 percent of the maximum dry density at optimum moisture content of the surrounding material. Any deficiency in the quantity of material for backfilling the trenches shall be supplied by the Contractor at his expense.

The Contractor shall at his own expense make good any settlement of the trench backfill occurring after backfilling and until the expiry of the defects liability period.

On completion of pressure and leakage tests exposed joints shall be covered with approved selected backfill placed above the top of the pipe and joints in accordance with the requirements of the above specifications. The Contractor shall not use backfilling for disposal as refuse or unsuitable soil.

2.4. Fillings of the trench excavated in rock

In case of excavation of trenches in rock, the filling up to a level of 30 cm above the top of the pipe shall be done with fine materials, such as soft soil, murrum etc. The filling up of the level of the centre line of the pipe shall be done by hand compaction in layers not exceeding 15 cm, whereas the filing above the centre line of the pipe shall be done by hand compaction or mechanical means in layers not exceeding 15 cm. The filling from a level of 30 cm above the top of the pipe to the top of the trench shall be done by mechanical methods with broken rock filing of size not exceeding 15 cm mixed with fine material as available to fill up the voids.

2.5. Consolidation

The consolidation of the filled material shall be done to attain 95 % proctor density. The density of the filled and compacted material shall be tested regularly and record maintained accordingly.

2.6 Road Restoration

The contractor shall be restoring the road after laying & jointing of pipe & refilling of trench. The restoration work shall include WBM & Bituminous/cc surface of thickness & design mix as directed by EIC

3.0 PIPES (Pipes shall be procured only from the Manufactures.)

3.1 Supply, laying and jointing of DI Pipes and fittings.

The pipe to be supplied and laid under this contract shall be DI K-7/K-9 as per IS 8329-2000 Rubber Gaskets used with push-on joints or mechanical. All fittings for the pipe shall conform to the provisions of IS 5382-1985. along with DI fittings confirming to IS 9523:1980 complete.

3.2 The laying of pipe shall be as per IS 12288:1987 with up to date amendments.

3.3 The manufacturer and their associates(if any) should have the facility to carry out the internal coating / lining and external coating / painting at factory for pipes and specials confirming to IS 11906:1986.

3.4 The DI pipe manufacturer should have valid BIS license from last 5 years (or valid BIS license from last 2 years with an experience of manufacturing and supplying atleast 500 kms of various diameters of DI pipe to any State/Central govt/ board/organization of repute in last 3 years) and

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the pipes should be manufactured conforming to IS 8329-2000 specification and further amendment to the code as on date and duty ISI marked.

3.5 The DI pipe manufacturer should have house facility for carry out the following test for size DN 80-DN1000:-

a) C -value determination arrangement

b) Type test for leak tightness as per ISO 2531:2009/BS EN 545/IS 8329:200.

3.6 DI pipe manufacturer should have the ISO 9001:2008 & ISO 2531:2009 certification for manufacture of DI pipe.

3.7 A certificate for having supplied DI pipe of size proposed in the project for quantity 1/3 of the TENDER requirement during last 3 years to any state/central govt. department /board to be submitted by pipe manufacturer.

The manufacturer should be able to demonstrate the conformity of the product to the requirement by controlling the manufacturing process and by carrying out the various tests as specified in IS wherever possible, statistical sampling techniques should be used to control the process so that the product is produced within the specified limit. Quality assurance program of the manufacturer shall be enclosed with the Tender.

4. Supply, laying and jointing of High Density Polyethylene (HDPE) Pipes and fittings.

4.1. Scope

This specification covers the requirements for successfully designing, manufacturing, supplying, laying, jointing and testing at works and site of High Density Polyethylene Pipes used for water supply. Use of HDPE Pipes of various diameters shall be as per relevant BIS /other standards marked with Pressure class of PN 6.

4.1.2 Applicable Codes

The manufacturing, testing, supplying, laying, jointing and testing at work sites of HDPE pipes shall comply with all currently applicable statutes, regulations, standards and Codes. In particular, the following standards, unless otherwise specified herein, shall be referred. In all cases the latest revision of the Codes shall be referred to. If requirements of this Specification conflict with the requirements of the standards / Codes, this Specification shall govern.

Others Codes not specifically mentioned here but pertaining to the use of HDPE pipes form part of these Specifications.

Code No.	Title/Specification
IS 4984	High Density Polyethylene Pipes for Water Supply
IS 2530	Methods of test for polyethylene moulding materials and polyethylene compounds DI K7 Pipes, Joints and Fittings for use for Potable Water Supply
IS 5382	Rubber sealing rings for gas mains, water mains and sewers.
IS 4905	Methods for random sampling
IS 7328	High density polyethylene materials for moulding and extrusion
IS 7634	Laying & Jointing of Polyethylene (PE) Pipes
IS 9845	Method of analysis for the determination of specific and/or overall migration of constituents of plastics material and articles intended to come into contact with foodstuffs
IS 10141	Positive list of constituents of polyethylene in contact with food stuffs, pharmaceuticals and drinking water.
IS 10146	Polyethylene for its safe use in contact with foodstuff, Pharmaceuticals and drinking water.

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4.1.3 Designation

4.1.3.1 Pipes shall be designated as per IS 4984, according to the grade of material, followed by pressure rating and nominal diameter, for example, PE 100 PN 10 DN 200 indicates a pipe pertaining to material grade 100 having a pressure rating 1.0 MPa and outside nominal diameter 200 mm.

4.1.4 Colour

The color of the pipe shall be black.

4.1.5 Materials

The material used for the manufacturer of pipes should not constitute toxicity hazard, should not support microbial growth, should not give rise to unpleasant taste or odour, cloudiness or discoloration of water. Pipe manufacturers shall obtain a certificate to this effect from the manufacturers of raw material by any internationally reputed organization as per the satisfaction of the Engineer-in-Charge in charge.

4.1.6 Raw Material

(a) Raw material used to manufacture the HDPE pipes shall be PE 100, pre-compounded PE resin confirming to IS: 4984, IS: 7328 and ISO: 4427-2007. For this a certification has to be given by the resin manufacturer as per clause 3.2.3 of IS: 4984. The resin proposed to be used for manufacturing of the pipes should also comply with the following norms as per ISO 9080-2003.

(b) The resin should have been certified by an independent laboratory of international repute for having passed 10,000 hour long term hydrostatic strength (LTHS) test extrapolated to 50 years to show that the resin has a minimum MRS of over 10 MPa for PE 100 resin. Internal certificate of any resin manufacturer will not be acceptable.

(c) Certificate from reputed organization OR Raw material supplier for having passed the full scale rapid crack propagation test as per ISO 13478. High density Polyethylene (HDPE) used for the manufacture of pipes shall conform to designation PEEWA-50-T-003 of IS 7328. HDPE conforming to designation PEEWA-50- T-003 of IS 7328 may also be used with the exception that melt flow rate (MFR) shall not exceed 1.10 g/10 min. In addition the material shall also conform to clause 5.6.2 of IS 7328.

(d) The specified base density shall be between 940 kg/ m^3 and 958 kg/ m^3 (both inclusive) when determined at 27°C according to procedure prescribed in IS 7328 The value of the density shall also not differ from the nominal value by more than 3 kg/ m^3 as per 5.2.1.1 of IS 7328. The MFR of the material shall be between 0.20 and 1.10 (both inclusive) when tested at 190°C with nominal load of 5 kgf as determined by method prescribed in IS 2530. The MFR of the material shall also be within ± 20 percent of the value declared by the manufacturer.

(d) The resin shall be compounded with carbon black. The carbon black content in the material shall be within 2.5 ±0.5% and the dispersion of carbon black shall be satisfactory when tested as per IS 2530.

4.1.7 Anti-oxidant

The percentage of anti-oxidant used shall not be more than 0.3 percent by mass of finished resin. The anti-oxidant used shall be physiologically harm less and shall be selected from the list given in IS 10141

4.1.8 Reworked Material

No addition of Reworked/ Recycled Material from the manufacturer's own rework material resulting from the manufacture of pipes is permissible and the vendor is required to use only 100% virgin resin compound.

4.1.9 Maximum Quality of Pipe

The outside diameter of pipes, tolerance on the same and quality of pipe shall be as given in table 2 of IS 4984. Ovality shall be measured as the difference between maximum outside diameter and minimum outside diameter measured at the same cross section of the pipe, at 300 mm away from the cut end. For pipes to be coiled the quality shall be measured prior to coiling. For coiled pipes, however, re-rounding of pipes shall be carried out prior to the measurement of quality.

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4.1.9.1. Detect ability

HDPE Pipes should be detectable when buried underground, by providing a copper wire of 1.50 sq.mm +/- 0.2 sq. mm , co-extruded or fixed on to the pipe with the help of superior quality adhesive tape on the outer surface as provided in IS 7634 part II in such a way that in no way it affects the pipes' conformity to relevant BIS codes.

4.1.10 Length of Straight Pipe

The length of straight pipe used shall be minimum 6 mtr or as agreed by Engineer-in-Charge. Short lengths of 3 meter (minimum) up to a maximum of 10% of the total supply may be permitted.

4.1.11 Coiling

The pipes supplied in coils shall be coiled on drums of minimum diameter of 25 times the nominal diameter of the pipe ensuring that kinking of pipe is prevented. Pipe beyond 110mm dia shall be supplied in straight length not less than 6m.

4.1.12 Workmanship / Appearance

Pipes shall be free from all defect including indentations, delaminating, bubbles, pinholes, cracks, pits, blisters, foreign inclusions that due to their nature degree or extent detrimentally affect the strength and serviceability of the pipe. The pipe shall be as uniform as commercially practicable in colour opacity, density and other physical properties as per relevant IS Code or equivalent International Code. The inside surface of each pipe shall be free of scouring, cavities, bulges, dents, ridges and other defects that result in a variation of inside diameter from that obtained on adjacent unaffected portions of the surface. The pipe ends shall be cut clearly and square to the axis of the pipe. IS 4984 :1995 will be followed for visual appearance.

4.1.13 Handling, Transportation Storage and Lowering of pipes

During handling, transportation, storage and lowering, all sections shall be handled by such means and in such a manner that no distortion or damage is done to the section or to the pipes as a whole.

The following procedures should be followed so as to eliminate potential damage to pipes and fittings and to maintain maximum safety during unloading, lifting and lowering.

- Pipes must not be stored or transported where they are exposed to heat sources likely to exceed 60°C.
- Pipes shall be stored such that they are not in contact with direct sunlight, lubricating or hydraulic oils, petrol, solvents and other aggressive materials.
- Scores or scratches to a depth of greater than 10% or more of wall thickness are not permissible; any pipes having such defects should be strictly rejected.
- PE pipes should not be subjected to rough handling during loading and unloading operations. Rollers shall be used to move, drag the pipes across any surface.
- Only polyester webbing slings should be used to lift heavy PE (>315mm) pipes by crane. Under no circumstances, chains, wire ropes and hooks be used on PE pipes.
- Pipes shall not be dropped to avoid impact or bump. If any time during handling or during installation, any damage, such as gouge, crack or fracture occurs, the pipe shall be repaired if so permitted by the competent authority before installation.
- During coiling care should be taken to maintain the coil diameter at or above the specified minimum to prevent kinks. Coiling shall be done when the pipe attains the ambient temperature from the extruder. In uncoiling or recoiling care should be taken that sharp objects do not scour the pipe.
- When releasing coils, it must be remembered that the coil is under tension and must be released in a controlled manner. The end of the coil should be retained at all times, then the straps released steadily, one at a time. If the coil has bands at different layers of the coil, then they should be released sequentially starting from the outer layers. The amount of the energy locked up in the coil will depend on the size of the pipe, the SDR of the pipe, and the size of the coil.
- Straight lengths should be stored on horizontal racks giving continuous support to prevent the pipe taking on a permanent set
- Bare coils shall be wrapped with hesian cloth for long distance (> 300Kms) transportation. The truck used for transportation of the PE pipes shall be exclusively used of PE pipes

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only with no other material loaded – especially no metallic, glass and wooden items. The truck shall not have sharp edges that can damage the Pipe.

- Pipes manufactured at factory are to be carried to the site of work directly or stacked suitably and neatly along the alignment/road side/elsewhere near by the work site or as directed by the Engineer-in-Charge.
- Damages during transit, handling, storage will be to the Contractor's account and replacement for such pipes has to be made by the Contractor without any extra cost as directed by the Engineer-in-Charge.

4.1.14 Lowering, Laying of Pipes

- Each pipe shall be thoroughly checked for any damages before laying and only the pipes which are approved by the Engineer-in-Charge shall be laid.
- While installing the pipes in trenches, the bed of the trench should be level and free from sharp edged stones. In most cases, the bedding is not required, as long as the sharp and protruding stones are removed, by sieving the dug earth, before using the same as backfill material. While laying in rocky areas suitable bed of sand or gravel should be provided. The fill to about 10 to 15 cm above the pipe should be fine sand or screened excavated material. Where hard rock is met with, bed concrete M15, 15 cm or 20cm thick sand bed as approved by the Engineer-in-Charge may be provided.
- As PE pipes are flexible, long lengths of Electro/Butt-fusion jointed pipes having joints made above ground can be rolled or snaked into narrow trenches. Such trenches can be excavated by narrow buckets.
- During the pipe laying of continuous Electro/Butt-fusion jointed systems, due care and allowance should be made for the movements likely to occur due to the thermal expansion/contraction of the material. This effect is most pronounced at end connections to fixed positions (such as valves etc) and at branch connections. Care should be taken in fixing by finishing the connections at a time the length of the pipe is minimal (lower temperature times of the day.)
- For summer time installations with two fixed connection points, a slightly longer length of PE pipe may be required to compensate for contraction of the pipe in the cooler trench bottom.
- The final tie-in connections should be deferred until the thermal stability of the pipeline is achieved.
- The flexibility of polyethylene pipes allows the pipe to be cold bend. The fusion jointed PE pipe is also flexible as the plain Pipe. Thus the total system enables directional changes within the trench without recourse to the provision of special bends or anchor blocks. However, the pipe should not be cold bend to a radius less than 25 times the OD of the pipe.
- The Installation of flanged fittings such as connections to sluice/air/gate valves and hydrant tees etc., requires the use of stub ends (collars/flange adaptors complete with backing rings and gaskets. Care should be taken when tightening these flanges to provide even and balance torque.
- Provision should be made at all heavy fittings installation points for supports (such as anchoring of the flange in the soil) for the flange joint to avoid the transfer of valve wheel turning torque on to the PE flange joint.
- PE pipe is lighter than water. Hence care should be taken for normal installations where there could be a possibility of flooding of the trench thus the trench shall be kept free of water till the jointing has been properly done
- When flooded, some soils may lose cohesiveness, which may allow the PE pipe to float out of the ground. Several design checks are necessary to see if groundwater flotation may be a concern. Obviously, if the pipeline typically runs full or nearly full of liquid, or if groundwater is always below the pipe, flotation may not be a significant concern.
- However, weights by way of concrete blocks (anchors) are to be provided so that the PE pipe does not float when suddenly the trench is flooded and the soil surrounding the pipe is washed away. Thus site conditions study is necessary to ensure the avoidance of flotation.
- Pipe embedment backfill shall be stone-free excavated material placed and compacted to the 95% maximum dry density.

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4.1.15 The pipe ends shall be suitable for Electro-fusion/ Butt- Fusion jointing system that shall provide for fluid tightness for the intended service conditions.

4.1.16 Bedding, Backfilling and Compaction

4.1.17 Bedding

In case of sandy strata no separate bedding is required. However the bottom face / trench bed where pipe shall be placed shall be compacted to provide a minimum compaction corresponding to 95% of maximum dry density. The pipe bedding should be placed so as to give complete contact between the bottom of the trench and the pipe. The minimum cover over buried pipe should be 1 m.

4.1.18 Back Filling

Backfilling should be placed in layers not exceeding 15cm thickness per layer, and should be compacted to a minimum of 95% maximum dry density. The refilling should be done on both sides of pipe together & height difference in earthfill on each side should not be more to cause lateral movement of pipe.

Most coarse grained soil are acceptable. This may comprise of gravel or sand. However silty sand, clayey sand, silty and clayey gravel shall not be used unless proposed to be used in conjunction with gravel or clean sand.

It is very important that the pipe zone backfill material does not wash away or migrate in to the native soil. Like wise, potential migration of the native soil in to the pipe zone backfill must also be prevented.

Heavy earth moving equipment used for backfilling should not be brought until the minimum cover over the pipe is 90 cm in the case of wide tracked bulldozers or 120 cm in the case of wheeled roaders or roller compactors.

4.1.19 Compaction

Vibratory methods should be used for compaction. Compaction within distances of 15 cm to 45 cm from the pipe should be usually done with hand tempers. The backfill material should be compacted not less than 95% of maximum dry density.

4.1.20 Thrust Block

RCC thrust blocks, if required, should be suitably designed & provided at bends and at places of reduction in cross section to take care of thrust as required as per the provisions of relevant standards/codes.

4.1.21 Fittings & Specials

All HDPE fittings/ specials shall be of minimum PN 6 or above Pressure class, fabricated in accordance with IS: 8360 (Part I & III). PE Injection moulded fittings shall be as per IS: 8008 (Part I to IX). All fittings/specials shall be fabricated or moulded at factory only. No fabrication or moulding will be allowed at site, unless specifically permitted by the Engineer-in-Charge. Fittings will be Butt welded on to the pipes or other fittings by use of Electro/Butt fusion process. Recommended makes for PE / PP fittings / specials are Georg-Fischer / Glynwed / Frialen / Durafuse if purchased or should be manufactured by the manufacturer himself to have consistency with pipe material/grade.

4.1.22 Bends

HDPE bends shall be plain square ended conforming to IS: 8360 Part I & III Specifications. Bends shall be moulded.

4.1.23 Tees

HDPE Tees shall be plain square ended conforming to IS: 8360 Part I & II Specifications. Tees may be equal tees or reduced take off tees. Tees shall be moulded or fabricated from pipe elements.

4.1.24 Reducers

HDPE Reducers shall be plain square ended conforming to IS: 8008 Part I & VII Specifications. Reducer must be moulded.

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4.1.25 Flanges/ HDPE Pipe Ends

HDPE Stub ends shall be square ended conforming to IS: 8008 Part I & VI Specifications. Stub ends will be welded on the pipe. Flange will be of slip on flange type as described below.

4.1.26 Slip-On Flanges

Slip-on flanges shall be metallic flanges covered by epoxy coating or plastic powder coating. Slip-on-flanges shall be conforming to standard mating relevant flange of valves, pipes etc. Nominal pressure rating of flanges will be PN10.

4.1.27 Welding Procedure

Jointing between HDPE pipes and specials shall be done as per the latest IS: 7634 part II. Method of jointing between the pipes to pipes and pipes to specials shall be with Electro or Butt-fusion welding using automatic or semi automatic, hydraulically operated, superior quality Electro/Butt-fusion machines which will ensure good quality welding of HDPE pipes.

Normally Electro/Butt fusion welding shall include following activities:

- Aligning of pipe on welding M/C
- Surface preparation for welding.
- Heating of pipes/ ends
- Holding pipes for welding
- Cooling etc.

4.1.28 Hhydraulic Testing

Pipes shall be given different hydraulic tests for ensuring quality of manufacture as per clause 16.9.5.6.2 of Standard Specification.

4.1.29 Site Fabrication of PE Fittings

Two or more PE specials coming at one place (like PE Tee, Reducer, Flanged end etc.,) shall be jointed at contractor's workshop and transported to the site of works for final installation with proposed PE pipelines. In no case, jointing of three or more welds in one place, at site will be allowed.

4.1.30 Training

The Contractor shall provide on-site training on PE pipe laying, jointing, testing and maintenance etc., to the personnel authorized by EMPLOYER.

4.1.31 Manuals

Technical Manual on PE pipes including precautions to be taken during operation of the pipeline shall be prepared and submitted by the contractor immediately on completion of work.

4.1.32 Flanges

All flanges employed in the project must be compatible whatever material used.

4.1.33 Marking

All pipes shall be marked at maximum interval of 1 m. The marking shall indicate at least the following information.

1) Manufacturer's name & / or trade mark.
2) The dimensions (nominal outside diameter X nominal wall thickness)
3) The outside diameter tolerance (A or B)
4) The designation of pipes material (PE 100, PE 80 etc)
5) The nominal pressure (PN)
6) The production period (date or code)
7) The number of the International standard.
8) The word "Water" shall also be included.
9) **Lot number/Batch Number**

4.1.34 Packing & Transport

The pipes should be preferably transported by road from the factory and stored as per the manufacturer specifications to protect damage.

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4.1.35 Summary of quality Tests :

1.	**Quality Mark** :	Pipe: IS 4984	
2.	**Material**	:	As per IS 4984. However only virgin resin is allowed, reworked material is not allowed.
3.	**Grade of Material**	:	PE 100 as per IS 4984 (Certificate from raw material manufacturer is required).
4.	**Pressure Rating**	:	Minimum PN 6 or above as per requirement.
5.	**Colour**	:	as per IS 4984
6.	**Dimensions**	:	
	Diameter	:	The nominal diameter (outside)
	Wall thickness	:	As per IS 4984.
	Length	:	
i.	**For diameter up to 110 mm :**		min 6 mtr max. 100 meter
ii.	**For diameter more than 110 mm**		: minimum 6 meter. (Tolerance as per IS 4984)
7.	**Visual Appearance**		: as per IS 4984.
8.	**Test and sampling**		: as per IS 4984.
9.	**Special Test**	:	

Notch hydraulic Test for the HDPE pipe made from PE-100 grade raw material as per ASTM 1474 OR ISO 13479 at manufacturers laboratory or independent laboratory and should pass the Hydraulic test as per IS:4984:1995 for a minimum 165 Hours. The test reports shall not be more than three months old.

Pipe shall convey water under variable temperature conditions ranging from 4 degree centigrade to 45 degree centigrade.

10. **Jointing of pipes (pipe end) :**

For diameters up and more than 110 mm diameter: Butt or Electro-fusion Process

11. **Quality Assurance :**

Quality Assurance Plan shall be got approved from the employer before production start.

BIS License

The pipe manufacturer who is going to supply the pipes for the project has to have a valid BIS license. The Bidders shall include this valid license along with the Tender from the proposed pipe/ Fittings manufacturer.

Performance requirements

The pipe supplied should have passed the acceptance tests as per clause given in specified standards. The manufacturer should provide the test certificates for the tests conducted, as required in specified standards along with the supply of pipes. These acceptance tests can be performed in the in-house laboratory of the pipe manufacturer. The Employer will depute one person to be positioned at the pipe manufacturing facility of the successful Contractor. This deputed person will check and approve each lot of the pipes manufactured before they leave the factory after ensuring that they are meeting the required specifications.

Note: All remaining parameters / specifications shall be e as per respective IS.

5. Field Hydraulic testing of the pipelines

a. **Sectional tests**

After laying and jointing the pipeline shall be tested for tightness of barrels and joints, and stability of thrust blocks in sections approved by the Engineer-in-Charge in Charge. The length of the sections depends on the topographical conditions. Preferably the pipeline stretches to be tested shall be between two chambers (air valve, scour valve, bifurcation, other chamber).At the beginning, the Contractor shall test stretches not exceeding 1 km. After successful organization and execution of tests the length may be extended to more than 1 km after approval of the

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Engineer-in-Charge in Charge. The hydraulic testing shall have to be commenced immediately after laying and jointing of 1 km reach is completed.

The water required for testing shall be arranged by the contractor himself. The Contractor shall fill the pipe and compensate the leakage during testing. The Contractor shall provide and maintain all requisite facilities, instruments, etc. for the field testing of the pipelines. The testing of the pipelines generally consists in three phases: preparation, pre-test/saturation and test, immediately following the pre-test.

6. Flushing and disinfecting of pipelines

After testing and commissioning the contractor shall flush the pipes with a velocity not less than 1 m/s or as approved by the Engineer-in-Charge in Charge. Disinfection of drinking water pipelines should be done by Contractor.

7. Above ground pipeline

DI K9 pipe of appropriate size, conforming to IS : 8329 or MS pipes of appropriate size and thickness, conforming to IS :3589 will be used wherever the pipeline is laid above ground. MS pipes will be in-lined and out-coated with 15 mm thick Cement concrete mortar or Epoxy coating of 400 Micron DFT.

8. Flow measuring devices:

Electromagnetic Flow Meter of appropriate size shall be provided along with 8 hour Battery back-up, at inlet and outlet of the Raw water and Clear water pipeline and Feeder pipeline outlet at RCC Over head tanks; to check losses and measure the quantity of water. Reading display of all the Flow meters, alongwith data logging instruments should be made available at single point, wherever decided by the Engineer-in-charge.

All the Electromagnetic Flow meters shall have the same make and salient features as under.

Coil housing of the Electromagnetic flow meters of fully welded SS-316 and Flow-tube lining of PTFE / EPDM / Neoprene.

Recommended make : Krohne-Marshall / Yokogawa / Emerson- Rosemount.

9. Technical Qualifications for procurement of pipes during construction:

9.2. H.D.P.E. Pipe:

9.2.1. The Pipe manufacturer should have an annual installed production capacity of quantity equal to this TENDER.

9.2.2 The manufacturer should hold valid IS license under IS:4984 consecutively for last five years to manufacture ISI marked pipes.

9.2.3 The Pipe manufacturer should have manufactured and supplied in India at least HDPE Pipe of minimum 110 mm or above dia. More than required in this TENDER during past 3 years ending 2012. Self certified document from HDPE Pipe Manufacturer to be attached alongwith technical Tender.

10. Technical Qualifications for Bidder:

10.1 The Bidder should have successfully executed one job of Supply, laying and commissioning of ISI marked HDPE Pipeline, complete in all respects on Turn-key basis having cost 50% of the proposed works.

11.0 Installation and Commissioning of HDPE pipes

11.1 Installation

a. Supplying, laying, jointing, testing and commissioning of pipes shall conform to relevant IS codes, as applicable.

b. The alignment of pipelines shown in drawings of the TENDER documents is only indicative and the exact alignment will be as per drawings and/or as directed by the Engineer or his representative.

c. The HDPE Pipes shall be laid in accordance with the latest IS 7634 Part-2

12.0 Field Hydraulic Test

a. 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

b. 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.

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c. Proposals for testing where thrusts on structures are involved, even where thrust flanges on the piping are installed, shall be with the prior approval of the Engineer.

d. The proper method of filling the pipeline with water shall be used. The length under test shall be filled making certain that all air is displaced through an air valve or any other appropriate mechanism. The test length shall then remain under constant moderate pressure as per testing method given in the IS 7634.

e. As per IS code water required to built up allowable drop in pressure during test will be treated as a make up water.

f. The maximum allowable test pressure shall be 1.5 times the system design pressure or pipe rating which ever is higher

g. Notwithstanding the satisfactory completion of the hydraulic test, if there is any discernible 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 with cost including the cost of water.

h. Test pressures are to be measured in kg/cm2 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.

13.0 INSTALLATION OF VALVES

General

The installation of valves shall be made according to the instructions of the manufacturer and the Engineer.

Installation of valves

Butterfly/Sluice valves shall be installed between flanges according to the instructions of the manufacturer.

Valves shall be placed on a support of concrete so that no shear stress is in the flanges. In case of axial thrust due to closure of a valve against pressure the valve shall be anchored in the support in a suitable manner to transfer the thrust into the floor slab of the chamber.

Air valves shall be installed on top of air valve tees.

SLUICE VALVES

DESIGN REQUIREMENT

A. Sluice valves shall generally conform to IS 14846/BS EN 1171/DIN 3352. Additionally, they should also meet specific requirement as stated.

B. Spindle, thrust collar and operating arrangement including hand wheel should be designed in such a way that one adult male is able to operate the valve against full differential pressure by exerting no more than 8 kgf effort (pull and push) on the hand wheel.

FEATURES OF CONSTRUCTION

a. Valves shall have inside screw, non rising spindle.

b. Valves shall be with appropriate bushing arrangement for replacement of packing without leakage (350 mm ø and above), up to 350 mm ø valves shall be glanduss.

c. Valves 450 mm ø & above shall be provided with an antifriction device / ball thrust bearing arrangement to minimize friction between spindle collar and casting. These should be housed away from wet chamber and should have facility for periodic greasing.

d. Valves of size 450 mm ø and above shall be provided with enclosed, grease packed spur gear box.

e. Valves 450 mm ø and above shall be provided with a drain and air plug.

f. All valve doors when fully closed would ensure door faces are riding on body seat ring by at least 50% of the width of seat ring and there is sufficient room for wear travel. Applicable for valves 350 mm and above., up to 300 mm valves shall be resilient seated.

g. All face and seat rings will be force/press fitted and additionally riveted (300 ø & above) to the recess in the CI casting. No screws are allowed.

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h. Spindle, thrust collar and operating arrangement including hand wheel should be designed in such a way that one adult male is able to operate the valve against full differential pressure by exerting no more than 80 N effort (pull and push) on the hand wheel. Only single start, square threads with a pitch not exceeding 12 mm in the spindle be used.

i. Manufacturer to give details of gear box proposed – no. of spur pair, ratio, efficiency etc.

j. Manufacturer to justify with calculation that the valve proposed is operable within the effort parameters specified and no. of turns to ensure the time required to operate the valve from full open to full close is within reasonable limits. This is a vital requirement.

k. Nominal size of the valve shall be cast on the body of the valve.

DATA :

1.	Size	:	300 mm to 1000 mm
2.	Rating (Kg/sq.cm)	:	PN 1.0
3.	Drilling	:	IS 1538 Table 4 & 6 / relevant ISO with latest amendments/ BS EN 1092-2
4.	**Material of construction**	:	
	Body	:	DI IS 1865 Gr. 500/7 ; 400/15 **or** CI IS 210 Gr. FG 200 for PN 1.0 (all sizes)
	Wedge	:	DI IS 1865 Gr. 500/7 ; 400/15 (fully rubber lived EPDM, upto 300 mm) **or** CI IS 210 Gr. FG 200 for PN 1.0
	Spindle	:	St. St. AISI 410 / 316 / relevant ISO with latest amendments
	Seat & face rings	:	Bronze IS 318 LTB II 6 / relevant ISO with latest amendments (for 350 mm above)
	Drain & air plug	:	Bronze IS 318 LTB II 6 / relevant ISO with latest amendments
	Ball thrust bearing	:	SKF or equivalent
	Bushing arrangement	:	Halprene on bronze
	Rivets	:	Soft annealed brass
	Gland packing	:	Teflon coated / graphited asbestos / hemp
	Fasteners	:	Carbon Steel

SHOP TESTING :

HYDROTEST

	:	
Seat leakage	:	10 Kg/cm² (5 min) – for PN 1.0
Back seat leakage	:	5 Kg/cm² (2 min) – for PN 1.0
Body	:	15 Kg/cm² (5 min) – for PN 1.0

APPROVED MAKE IVC / KIRLOSKAR / VAG / FOURESS/IVI

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BUTTERFLY VALVES

a. Butterfly valves shall be of double eccentric and resilient sealed type generally as per BS EN 593, BS 5155 and IS 13095. Valves shall be installed in valve chambers. Valves shall be provided with stainless steel extension spindle so that valves can be operated from ground level and without entering the chamber.

b. Material of construction of butterfly valves shall comply with following requirements :

Item	PN 1.0 Valves
Body	Ductile IRON DIN 1693 – GGG40/spheriodal graphite icon IS 1865 Gr 400/12
Disk	Ductile IRON DIN 1693 – GGG40/spheriodal graphite icon IS 1865 Gr 400/12
Shaft	Stainless steel BS 970 Grade 431 S 29
Body Seat	Nickel weld overlay micro finished
Disc Seal	EPDM
Seal retaining ring	Ductile icon DIN 1693 – GGG40
Shaft bearing	Bronze with EPDM 'O' ring seal
Internal Fasteners	Stainless steel SS 316
Nuts, Bolts & washers for pipe flanges	High Tensile steel hot dip galvanized for valve in chamber. Stainless steel SS 316 for buried valves
Coating	Internal and external with power of liquid epoxy coating with minimum dry film thickness of 250 microns

c. Butterfly valves shall be suitable for mounting in any position. The valve shall be free from induced vibration.

d. Butterfly valve shall be suitable foe bi directional pressure testing with dead tight shut off even after long period of operation of 5 years. The valves shall be of double flanged long type.

e. The valve seal shall be of replaceable design. When the valve is fully closed, the seal shall seat firmly. The seat surfaces shall be machined smooth to provide a long life for the seal. All fasteners shall be set flush so as to offer the least resistance possible to the flow through the valve.

f. The shaft shall be stainless steel with bronze or equivalent seal with self lubricating bearings. Disc pin shall be stainless steel. Ring shall be Tenderirectional seal adjusting suitable for pressure and vacuum service. Removal and replacement of steel shall be possible without removing the operating mechanism, valve shaft and without removing the valve from the pipeline. Valve shaft shall be of one piece unit extending completely through the valve disc hubs.

g. All valve spindle and head wheels shall be positioned to give access for operational personnel. Valves shall be provided with enclosed gear arrangement for ease of operation. The gear box shall be worm and worm wheel design type totally enclosed grease filled and weather proof. The operation with gearing shall be such that they can be opened and closed by one man against an unbalanced head of 1.15 times the specified ratings. Valves and gearing shall be such as to permit manual operation in a reasonable time and not exceed a required rim pull of 200 N. The valve disc shall be 90 deg turn.

h. The disc shall be designed to withstand the maximum pressure differential across the valve in either direction of flow. The disc shall be contoured to ensure the lowest possible resistance to flow and shall be suitable for throttling operation.

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i. It should be possible to open the valve with upstream pipe fully filled and down stream pipe fully empty. The shaft shall be designed to withstand the maximum torque that will be imposed by the operator. It shall be secured to the disc by tapered stainless steel cotter pins.

j. Valve shall be provided with mechanism position indicator to show the position of the disc mounted on the driven shaft end.

k. Rigid adjustable stop mechanism shall be provided within the gear box or elsewhere on the valve to prevent movement of the disc beyond the fully opened or closed position (i.e. set points).

l. Valve shall be capable of closing against the maximum flow that can occur in practice. The break way torque against maximum differential head conditions shall be within the manufacturer]s limits.

m. All hand wheels shall be arranged to turn in a clock wise direction to close the valve, the direction of rotation for opening and closing being indicated on the hand wheels.

n. All hand wheels shall be provided with an internal locking device to prevent operation device by unauthorized person.

AIR VALVES

A SCOPE AND GENERAL DESIGN FEATURE

This section covers the requirements of double orifice type air valves with tamper proof cover to be used for evacuation of accumulation of air in water mains under pressure, for the exhaust of air when such mains are being charged with water and for inlet of air when they are emptied of water.

The working pressure of the air valves shall be 10 kg/cm^2 (PN 1).

B FUNCTION

Automatic air valves generally conforming to IS 14845 / relevant ISO with latest amendments are to be used for evacuation of accumulated air in water mains under pressure, for the exhaust of air when such mains are being charged with water and for ventilating the mains when they are being emptied of water.

C DESIGN FEATURES

a) Air valves shall be double orifice type and tamper proof unless otherwise directed by Engineer. A buoyant rigid float shall seal the large orifice and the chamber housing shall be designed to avoid premature closing of the valve by the air whilst being discharged. Small orifice shall discharge small air volume during operation under full internal pressures. All air valves shall be provided with isolating sluice valves and flanged end connection.

b) The valve shall be capable of exhausting air from pipe work automatically when being filled, the air being released at a sufficiently high rate to prevent the restriction of the inflow rate. Similarly the valve shall be capable of ventilating pipe work automatically when being emptied or under water hammer condition, the air inflow rate being sufficiently high to prevent the development of a vacuum in the pipelines. The valve shall also automatically release air accumulating in pipe work during normal working conditions.

c) The valves shall be designed to prevent premature closure prior to all air having been discharges from the line. The orifice shall be positively sealed in the closed position with the float only raised by the liquid and not by a mixture of air and liquid spray. The seating shall be so designed to prevent the float sticking after a long period in the closed position.

d) Air valves shall thus be designed to automatically operate so that they will;

- Positively open under internal pressure less than atmospheric pressure to admit air in bulk during pipeline draining operation;
- Exhaust air in bulk and positively close as water, under low head, fills the body of the valve during filling operation;
- Not blow shut under high velocity air discharge; and
- Exhaust accumulated air under pressure while the pipe is flowing full of water.

D CONSTRUCTION FEATURES

Material of construction of air valves shall comply with following requirements:

a) All air valves shall be constructed so that internal working parts which may become necessary for repairs shall be readily accessible, removable, and replaceable without used special tools and removing the valve from the line.

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b) Valves with air intake or exhaust facilities shall have an integral protecting cover top shall be supplied to prevent dirt and debris from entering the outlet of the valve.

c) The contractor shall verify with the supplier of the valves that the valves have the capacity to sustain the pipeline test pressure prior to testing. In the event that the valves do not sustain the pressure they shall be removed and the stub pipes from the main pipeline blanked off before pressure testing the pipeline.

E DATA

a)	Valve size	:	300 to 1000 mm dia
b)	Suitable for max. differential pressure (kg/cm²)	:	10
c)	Material of construction		
	Body and cover	:	CI IS 210 Gr FG 200 **or** SG iron 1865 Gr 400/12 or grade GGG40
	Float	:	Rubber coated timber **or** Polycarbonate up to 50 NB/ SS 304 above 50 NB
	Internal Linkages	:	SS 304
	Seat Ring	:	Dexine (Nitrile Rubber) or bronze seat
	Isolating Sluice Valve	:	Generally conforming to IS 14846/relevan ISO with latest amendments
	Spindle for Sluice Valve	:	St. St. AISI 410
	Bolts & Nuts	:	M.S.

TESTING AND PERFORMANCE

a) When tested as per clauses 11.6.d.1, the air passage and the function of ball floats in a valve shall be satisfactory, and the valve shall work smoothly.

b) Hydrostatic test of valve body, when tested in accordance with 11.6.d.4 there shall be no leakage through pressure sustaining components and joints. There shall be no permanent deformation of any part.

c) Valve seat and cock, when tested in accordance with 11.6.d.2 and 11.6.d.3 shall not show any leakage.

d) Function and Performance Test

d.1 The valve shall be fitted on a test bench. The pressure of the water in pipe shall be developed to working pressure, and the main valve shall be gradually opened to check the air release and float function. Compressed air shall then be slowly put into the valve through underside of the valve, and check the function of floats.

d.2 High Pressure Orifice Seat Test

Subsequent to high pressure orifice performance test, hydraulic pressure shall be reduced upto half of the working pressure to check leakage of orifice seat for a duration of three minutes.

d.3 Low Pressure Orifice Seat Test

Subsequent to high pressure orifice performance test, hydraulic pressure shall be reduced upto half of the working pressure to check leakage of orifice seat for a duration of three minutes.

d.4 Body Test

The valve body (without cover and ball floats) shall be covered by a blank flange, keeping isolating valve open. Hydrostatic pressure of 1.5 times the pressure class of the valve shall be applied for duration of 5 minutes to check the water tightness of the body.

14 VALVE CHAMBERS

Valve chambers shall be constructed according to the typical drawings suitable for the respective valve and special arrangement if any shall be approved by Engineer. They shall be constructed in brick masonry as shown in the drawing. The chambers shall be constructed after the laying of the pipes and the assembly of specials and valves. The size of the chambers shall be according to the following criteria/ as per direction of Engineer.

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- Minimum distance of flanges from walls : 45 cm
- Minimum distance of sockets from walls : 45 cm
- Minimum distance between highest point of equipment and roof slab : 30 cm
- Maximum distance between highest point of equipment and roof slab : 50 cm

Pipes passing through walls should be coated by two layer of soft material (Hessian felt) to allow for differential settling and longitudinal expansion if directed by Engineer. Only metallic pipes may be cast into the walls for anchoring purposes.

The work shall include excavation, consolidation, leveling, lean concrete as per drawing in foundations, finishing, refilling. It shall include all labour and material required for the complete chamber.

15 DISMANTLING JOINTS

Double flanged Dismantling joints shall be of Cast Iron in such a manner that valves (300 mm and above dia) can be dismantled without stress to the joints. These shall be for working pressures of 10 kg/cm2 (1 Mpa) and shall be completely leak proof with proper gasket arrangement. Flange dimensions shall conform to IS 1538 (part I to XXII). Flanged specials shall be supplied with required nuts, bolts and rubber gaskets. The nuts and bolts shall be of best quality carbon steel, machined on the shank and electro-galvanized. Rubber gasket shall be as per IS 5382. Dimensions and drilling of flat gasket will be as per IS 1538 : 1993, suitable for making flanged joint. The dismantling pieces shall provide minimum clearance of + 25 mm (total distance 50 mm. The dismantling joint shall be internally and externally coated with hot applied (dip) bituminous paint.

16 THRUST BLOCKS

The thrust blocks shall be of plain/reinforced cement concrete on site as per design and drawings to be given by the Contractor and approved by the Engineer In Charge. The thrust blocks shall be cast directly against the undisturbed soil.

17 OTHER SERVICES

Contractor shall take the necessary precautions to avoid the damage to other services such as water supply lines, telephone cables, electrical cables, storm water drains etc. In case of any damages to any of the services, contractor shall be responsible for restoring the facilities in bare minimum time at his own cost.

18 REINSTATING THE ROAD SURFACE

Road restoration should be done just after proper backfilling of trenches. About 100 mm thick layer of stone dust/zeera gitti should be filled in trenches and making with adjacent road. Any settlement in trench should be immediately filled with stone dust/zeera gitti. WBM/Bituminous surface shall be made as directed by Engineer In Charge.

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SPECIFICATION FOR CONSTRUCTION OF R.C.C. OVER HEAD WATER TANK

1. PREAMBLE:

The work of the aforesaid Overhead tank is to be assigned on Lump Sum contract at Turn-key job basis.

2. Scope of work:

Five RCC Overhead tank as mentioned in Description of work is to be designed and tested on Lump sum contract.

The work includes the following sub work:

i. Investigation and testing for foundation.
ii. Design and drawing of the structure.
iii. Construction as per approved designed and drawing.
iv. Providing and fixing of pipes, valves and other appurtenances.
v. Testing of the structure for the water tightness and stability.

All materials required for satisfactory completion of the work such as cement, steel, pipes, specials and valves shall be procured by the contractor himself. The water required for construction shall be arranged by the contractor but that required for testing and handed over to the department within the time period specified in the Notice inviting TENDER.

3. LOCATION OF WORK:

Overhead tank site: Four nos. 18 m staging OHTs,5 nos.2000 KL each having cumulative storage capcity 10000 KL.

4. GENERAL REQUIREMENT:

4.1 The foundation of the structure should be taken down sufficiently below the average ground level for safe transfer of load to undisturbed formation. The strata chart of test pit, taken at this site is enclosed as Drawing. No.3 for general information only Suitable Soil test should be carried out by the contractor through Govt. Engineering college or any other recognized laboratory to ascertain safe bearing capacity of the soil for design purpose.

4.2 The tank shall have RCC round column staging only circular columns shall be preferred. The specification laid down in the letter TC No. 236 dated 21.05.97 issued by Engineer-in-Chief PHED M.P. Bhopal be strictly followed.

4.3 The type of foundation should be suiting to the determined safe bearing capacity of the soil and shall be designed accordingly. The excavation shall be done in all sort of strata and if blasting is required, the contractor shall obtain permission from the competent authority and all rules regarding safety shall be followed.

4.4 The tanks can either be rectangular or circular is shaped supported over column staging but the location plan of the columns should permit utilization of spacing underneath fully for construction of office/staff building.

4.5 The capacity of the tanks specified in para 2.0 above shall be between the outlet level and the full tank level. The maximum depth of water in the tanks should not be more than 6.0 m. The outlet level should be kept minimum 0.15m above the tank floor level. A free board of 0,5m should be provided below the lowest surface of the roof slab or beam. The inlet level should be 0.10m above the full tank level. The scour level should be kept flush with the floor slab.

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4.6 The height of the staging specified in para 2.0 shall be above the general ground level at the tank site of the nearest road level whichever is higher and shall be measured up to tank floor level.

4.7 A RCC doglegged staircase 1.2m wide shall be provided from ground level to gallery on outlet of the tank. The staircase should have straight flights with intermediate landing at bracing levels. The rise of the stairs shall not be more than 25cm. The staircase should have railing on both sides comprising of 1.2m high GI medium class pipe of 80 mm dia posts, 1.5 to 1.6m apart and medium class 20mm dia I pipes in three rows. The GI pipes posts and the railing pipes (class medium) should be secured adequately.

4.8 A RCC gallery 1.2m wide all around the tank at vertical wall ring beam level should be provided to facilitate inspection, cleaning and painting of the tank. A railing comprising of medium class 80m dia GI pipes posts 1.2m high rigidly fixed in the gallery slab at 1.5m maximum spacing with 3 rows of 20mm GI pipes (Class medium) should be provided. The gallery should have access from the staircase, A steel door shall be provided at the entrance to the gallery or at the far end of the RCC staircase to prevent unauthorized entry.

4.9 RCC ladder properly supported from tank wall with hand rails 0.45m in width should be provided outside of the tank from gallery of top of roof slab. The RCC ladder shall have at lest one landing in between gallery and roof top and. Mild steel ladder, from the manhole in the roof slab to floor slab, inside of the tank to facilitate inspection and cleaning. These ladders should be of MS plates 65mmx10mm size with 20mm dia round bars fixed at 0.25 centers by holding and welding to MS plates. The insides ladder should be properly supported in the mid span for rigidity.

4.10 An apron of cement concrete 1:2:4 i.e. M-15 mix should be provided for an area which is 1.5 meter more the dimension of the tank of all sides having 100x100 mm drain in cement concrete 1:2:4 all around shall be constructed and water will be led to the proper disposal point through the drain to be constructed for the purpose. The top of the drain around the apron shall be 100mm above the ground level. Outer edge will be covered with sloping earth the apron will have a slope of 1.60 from centre towards the drawl. The edge of the drain will be flush with the top surface of the apron. The apron will be 100mm thick in cement concrete 1:2:4 laid on sub base of 100mm thick 1:4:8 cement concrete in case of black cotton/cohesive soil the soil will be removed up to 500mm below the ground level and refilled with rammed moorum up to 400mm incase of hard strata like moorum, kopra etc. moorum filling will not be required.

5. PIPES AND FITTINGS:

The inlet, outlet, over flow and scour pipes for the tanks shall be cast iron double flanged class A as per IS : 7181-186 all these pipes shall be independent of each other and shall be fixed in vertical position rigidly by bolting and clamping properly.

The size of these pipes in OHT shall be as given below

inlet dia of pipe	250 mm
Outlet dia of pipe	300 mm
Overflow dia of pipe	350 mm
Scour dia of pipe	200 mm

The size of these pipes in Sump well shall be as given below

inlet dia of pipe	250 mm
Outlet dia of pipe	250 mm
Overflow dia of pipe	300mm

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Cast iron bell mouths as per Appendix 10.2 of CPHEEO manual conforming to IS 1538-1976 shall be provide on the top end of all pipes. These pipes shall have CI puddle collars properly embedded in the floor slab at the time of concerting to provide monolithic joint. Cast iron strainer shall be provided don the top of outlet and scour pipes,. Cast iron duck foot bends shall be fixed over cement concrete bed block, to support vertical pipes. The bed blocks shall be designed to take the load of pipes and the water column indecently. The double flanged Duck foot shall be provided. 1.2m below average ground level at site.

Cast Iron Double flanged sluice valves with spur gear and hand wheel class PN 1.0 confirming to IS : 14846 with all revision up to date issued of NIT shall be provided and fixed minimum 3.0 m away from the ground level bracing, along with necessary C.I.D.F. pipes. The size of the valves shall be as given below:

Inlet valve Dia (150 mm)

Outlet valve Dia (150 mm)

Scour valve Dia (80 mm)

The overflow pipe shall be left open at minimum 3.00 m distance from bracing CIDF pipes shall be provided between Duck foot bends and D.F. sluice. The contract will limit up to fixing of DF values.

6 APPURTENANCES:

6.1 Water level indicator:

A float operated level indicator comprising of stainless steel float pulleys, steel wire rope and enameled indicator plate calibrated to read depth of water in metre, shall be provided.

The pulleys should provide free movement of rope and they should be easily accessible for repair and maintenance. The indicate plate should be fixed at about 5m. Above ground level on the front side of tank.

Additionally the following arrangement may be provided as optional

(a) Water level indicator, working on physical characteristics.

(b) Pressure gauge, calibrated, to read water depth directly.

6.2 Ventilators :

Mosquito proof ventilators, of suitable design shall be provide on the roof slab of tank to facilitate discharge of dissolved gases of water and to keep the inside of tank odour free.

6.3 Man hole:

An opening of 0.75x0.75m or 0.9m dia size shall be provided in the roof slab fo tank for access inside the tank for inspection and cleaning. The opening shall have CI/MS cover with locking arrangement.

Lightening Arrestor:

Aluminum lightening arrester as per relevant B.I.S. shall be above highest point and 30 mmx4mm size strip connected to earth electrode shall be provided. The earth strip shall be secured rigidly to concrete surface.

7 Finishing and painting

7.1 Form finish:

All external surfaces on the structure shall have form finish. However all uneven surface and small defects shall be made even immediately after removal of forms with 1:1 cement mortar. The inside surface of the tank shall be rendered even and water proof by cement plaster in 1:2 portion.

7.2 Painting of Concrete:

The outside surface of the Over Head Tank shall be painting with 2 coats of IS marked cement colour of approved make. The colour shade shall be decided by the Engineer-in-Charge.

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7.3 Painting of pipes etc.

Cast iron pipes, valves and fittings, shall be painted with 2 coats of black bituminous paint.

7.4 Painting of MS Ladders and MH Cover:

As the MS ladder inside of the tank and manhole cover shall be subjected to corrosive action of chlorinates water they shall be coated with epoxy paint

8. TESTING OF OVER HEAD TANK / SUMPWELL:-

In addition to the structural test as given in IS 456-1978 revised and amended up to date the Over head tanks shall also be tested for water tightness at maximum water level in accordance with clause 10.1.1 of IS 3370 (part-I0 1965. The tanks shall be filled more than 0.25m per day and the settlement of foundation of foundation shall be measured accurately before each filling. Any defect of any sort affecting the strength, durability, appearance of usefulness of the structure noticed during testing shall be completely removed to the satisfaction of executive Engineer with in the specified time for completion of work.

9. COMMISSOINING & HANDING OVER:-

On completion of all works and the successful of the over head tank, it shall be handed over to the department for commissioning as required on completion of work and testing. The contractor shall submit completion drawing in six sets along with foundation investigation, concrete strength water tightness test reports at the time of handing over of work.

Additional Specifications

01 The work of construction of RCC reservoir involves workman ship; hence requirement of higher standard than general concrete work is essential.

02 The TENDERs submitting their officer in form F (lump-sum TENDER) submit the drawing and calculation within one month from the date of acceptance of their TENDER for scrutiny and approval of competent authority of Public Health Engg. Department Madhya Pradesh. The responsibility for design, construction, structural stability and water tightness for all water tight structures will however, rest solely with the contractor and the will have to make good at their own const any damage or loss to Government due to defect, if any in the above mentioned work.

03 The TENDER submitting their offer in form "F" (lump-sum TENDER) shall indicate the approximate quantities of various items involved in the work e.g. cement, concrete and steel etc. This information shall be attached with the TENDER itself. The lump sum offer shall include provision for balcony railing, lightening arrestor, water level indicator and staircase also.

04 The contractor shall have to arrange his own steel whatever the quantity of steel is required to complete the whole structure in all respect. The department shall not supply any quantity of steel under any circumstances. No extension of time will be granted for late supplies of steel of escalation, if any in future. The steel for reinforcement shall conform IS2266-1962 OR IS 1977-92 (st. 44) only and a certificate shall be required to be produced to the department in support in addition to random sample at site duty got checked at contractor cost to see whether it confirm to above specification.

05 The tank container shall be designed to take care of corrosive effect of water due to mixing of chlorine in the water for disinfections.

06 The department shall not be responsible for providing water required for construction and other purpose. The contractor shall make his own arrangement for the same at his own cost.

07 Not extra charges for the plastering if required for the finishing of the surface of structure shall be paid under any circumstances.

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08. Whenever bailing out of water or dewatering of foundation is required to be done, nothing extra will be paid for it the contractor/firm should quote his rate after taking this factor into consideration.

09. The contractor/firm shall be required to submit the complete drawing in six copies on completion of the work in A3 size only.

10. The contractor shall have to make his own arrangement of electric or telephone connection, if required at his own cost.

11. For blasting if required, in foundation the contractor /firm will make his own arrangement for license/permit and materials from the competent authority.

12. The work shall be treated as complete when the same is completely tested and handed over to the department including site clearance.

DESIGN REQUIREMENT

01. A separate drawing showing only dimension must be given.

02. Details of reinforcement in different components like footing, columns bottom dome, vertical wall rings beams, roof dome and stair case etc.

03. Orientation and shape of each type of bar must be shown against sketch for the component length and total number of bar of each type must be mentioned to avoid confusion.

04,. Location of pipes and other fittings and extra reinforcement at opening should be shown separately.

05,. Bar bending schedule and location of construction joints also be made clear in the drawings.

06. Contractor shall consider the earthquake zone for design purpose.

REINFROCED CONCRETE WORK

It shall be strictly as per IS 456 & IS 3370 (part (i) to (iv), IS 11682 and other relevant specification revised up to date for RCC structure s.

01. Minimum strength of concrete:

Minimum strength of concrete for components of elevated tank shall be as below:

Columns, staging	-	M25 (250kg/sqm.cm)
Tank including roof	-	M-30 (300kg/sqmc.m)

02 Minimum cement content:

From durability considerations minimum content shall be as below:

Concrete MK-25	-	350mg/cum
Concrete M-30	-	400kg/cum

03 The cover of concrete:

The minimum cover shall be 40mm all the reinforcement & for foundation this cover shall be 60mm.

04. Cement Grade:

Grade 43of cement should be used for columns and grade 53 for the tank portion, including the top dome cover only fresh cement should be used in the tank. It is advisable to use cement, manufactured by major plant and reputed firms OPC or blast furnace slag cement should be used.

05 Water cement ratio

Water cement ratio shall not be more than 0.45. This means 22.5 litres of water per 50kgt beg of cement.

06. Use of Chemicals

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When the water cement ratio is less he strength and durability of concrete of concrete is good. It is advisable to use plasticizers in concrete and reduce water cement ratio up to 0.4 plasticizers manufactured by reputed combines are recommended.

(i) Sika Qualcretae 24-B park street, calcutta, 7000 16 CM bauchemie PVT Vardhman chambers sector 17 Vashi new Mumbai 400703

(ii) Rioffe, 12 c Vikas center, S.V. Road Betul, Creuze, West Mumbai 400054.

(iii) Fos Rock India Ltd. Hafeea Chambers 2nd floor 111/74 K.H. Road Bangalore 560027.

(iv) Shallmar tar products, construction Additive division 16 NGN Vaidya Marg, bank street Mumbai. 400023.

Proportion of plasticiser to be used shall be as per the instruction manual supplied by the manufactures.

07 MEASUREING:

The quantity of cement shall be determined by weight. The quantities of fine and coarse aggregates shall be determined either by volume or by weight.

08 Aggregates

It is advisable to use metal derived form igneous rock preferable of basaltic or granitic origin. The coarse sand should be free soil. All aggregates shall conform to all provision and test methods of I.S. specification 388-1963.

01 Fine aggregates when tested by the colorimetric method the color shall of be darker than light amber, fine aggregates shall be capable of developing 30% o the compressive strength.

02 Maximum aggregate size shall not be more than 20mm when the spacing of reinforcement bar is 20mm.

03 Fineness modulus shall be more ten plus or minus 0.20 from that of the approved sample.

04 Water shall be clean & free from oil acids of injurious substances.

09. Storage of material

Cement shall be stored off the ground in a dry ventilated building. Aggregate shall be stored in 0.6 meters layers on planning. reinforced steel shall be stored under cover & protected from rusting oil grease or distortion only steel needed for immediate use shall be removed from storage.

10 Minimum Dimension And shapes:

Minimum Dimension shall be as below:

Circular	400mm
Tank wall	200mm
Bottom slab	150mm
Top slab	125mm

Note: If a dome is provided at the top, the thickness can be limited to 100mm rectangular square columns are not allowed circular shafts are also not allowed. In respect of horizontal braces corners shall be chamfered by 40x40mm

Form

01 The contractor shall provide form that will produce correctly aligned concrete.

02 The centering shall be true and rigid and thoroughly based both horizon tally and diagonally. The forms shall b sufficiently strong to carry the dead weight of the concrete without defection and tight enough to prevent leakage of mortar.

03 For exposed interior or exterior concrete surface of columns and walls, steel or other approved corrosion resistance devices shall be used.

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04 Rigid care shall be exercised that all columns are in plum and true & thoroughly cross braced to keep them so.

05 All floor and beam concreting shall be crowned not less than 6mm in all direction for every 4.8 meter span.

06 Beveled strains shall be provided in form, angles and in corners of column and beam boxes for chamfering of corners where shown in drawings or as directed.

07 The inside of forms shall be coated with approved oil thoroughly wetted oil shall be applied before reinforcement is placed.

08. Temporary openings for cleaning and inspections shall be provided at the base of vertical forms and at other places when they are necessary.

11. FORM WORK:

Wherever intz type of tanks are adopted or where then is an inclined slab having inclination steeper than one vertical to three horizontals, inside form work must be provided, the procedure for such a form work be

a) Place outer form work.

b) Place inner form work 300 to 450mm wide Then concrete that portion then fix next strip and concrete.

c) In respect of top of bottom domes, place upper form work for lowest circular strip of width equal to 1/4th dia of dome and concrete as stated above, then concrete central half for which top form may not be provided.

12. REINFORCEMENT STEEL

01. Bars and rods shall be free from scale oil structural defects and shall be maintained so on the job.

02. Fabrication shall be accurately done to the dimensions shown on the drawings, stirrups and ties shall be bent around a pin having diameter at least twice the bar thickness, other bars shall be bent around a pin having a diameter at least 6 times the bar thickness. All bars shall be bent cold.

03. All steel will be rigidly held in place with approved galvanized wire devices in such a manner that all steel will support the weight of the workman without displacement.

04. On exterior exposed concrete no metal ties charts or spacer shall remain within 40mm of the finished surface.

05. The steel bars used for reinforcement shall be strictly as per IS specifications.

13. Minimum Steel:

Design requirements as set out in relevant codes in respect of steel shall be full satisfied. However, following minimum steel should be provided

a)	Vertical steel in column	0.8% of cross sectional area actually required & 0.3% when larger section than actually required is provided.
b)	Horizontal links in columns	not less than 8mm dia at 200mm c/c or 10mm dia not more than 300mm c/c.
c)	Exposed RCC Surface	On both faces when thickness is 150mm or more. 2 kg/sqm in one direction. 2 kg/sqm in perpendicular direction. The above requirement is satisfied if. 8mm bars @ 200mm c/c OR 10mm bars @ 300mm c/c are provided.

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		Even if design steel is less than above, the above minimum shall be provided.
d)	Steel in tanks	As per provision of IS 3370 subject to minimum as set out in (c) above.

13. Minimum Spacing of Reinforcement:

Maximum spacing of main reinforcement in slab or walls shall not be more than 150mm center to center. The spacing of secondary bars, such as distribution steel of vertical bars in columns shall not be more than 300mm center to center.

14. Type of Steel:

It is advisable to use corrosion resistant CR steel such steel is now available.

15. Detailing of Steel:

Before commencing the work the drawing should be studied. It must be insisted that the designer provides details of the shape of each bar, its diameter, length and numbers of each category in a schedule of reinforcement. This must be incorporated in every working drawing.

16. Mixing Concretes:

01 It is extremely essential that the contractors undertaking the work should have concrete mixer with them. No hand mixing shall be allowed.

02. Concrete shall be mixed in the standard batch mixer with a drum speed of 200 to 250 peripheral feet per minute mixing time shall be two minutes for batches of 1 cu. yd or 0.39 cum or under and shall be increased 15 seconds for each additional 1/2 cu. yd or 0.39 cum of fraction there of.

03. Tempered concrete shall not be allowed Air standard or lean concrete shall not be used, the contents of the mixer shall be completely discharged before each new batch is loaded.

04. The concrete shall be, uniform in ingredients, colour and consistency.

17. Transportation

Concrete shall be handled from the places of mixing to the place of original deposit as rapidly as practicable by methods which will prevent segregation or loss o any ingredients. If segregation does occur during transport the concrete shall be remixed before begin placed.

18. PLACING OF CONCRETE

01. Concrete shall be deposited in its final position with out segregation remanding or flowing.

02. When possible concreting shall be continues unit the section in completed.

03. Form shall be clean before concrete is placed.

04. In no case the concrete shall be laid without vibration, it is desirable to keep two concrete vibrators at the construction site so that in case of break down the other vibrator can be used.

05. Concrete shall be shaped & vibrated with approved mechanical vibrator to maximum subsidence without segregation and adjacent to form and joints over vibrating or vibrations of very wet mixes will not be permitted and should be avoided Reinforcement bars shall be shaken to ensure bond with concrete.

06. Slabs and beams stems shall be placed in one operation.

07. Concrete columns & walls settle at least 2 hours before the floor system supported on is poured.

08. Construction joints be treated in accordance with is 456. The surface of already laid concrete be cleaned by water jet and cement slurry be applied, Cement mortar 10mm thick of the same proportion as in concrete by applied and then fresh concrete of the lift be laid. The form work must overlay 100m on the already laid concrete.

09. Conveying & chatting of concrete shall be done only by approval of the Engineer-in-charge & with equipment to insure a continuous flow with out segregation.

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10. Water accumulation during placing shall be removed concrete shall not be deposited in such accumulation.

11. The concrete shall be placed and compacted before setting commences and should not be subsequently disturbed.

12. Converting shall be placed and compacted before setting commences and should not be subsequently disturbed.

19 EXPOSED SURFACE

01 Imperfect surfaces where strength is not impaired may be patched and rubbed smooth with carborundum brick.

02. Fins and projection shall be removed and the concrete surface affected there by shall be rubbed smooth.

03. Small voids shall be filled with 1:3 mortar pressed into holes and floated smooth.

04. Plastering and steel trawling of surface shall not be allowed.

05 Honey comb concrete shall be repaired by removal and replacement of member.

06. Forms shall be filled tightly so as to minimize fins joints shall be finished with bevels strips as directed by the Engineer-in-charge.

20. CURING CONCRETE

01. It is extremely important to make arrangement for supply of sufficient water at the construction site for curing of the concrete. Continuous and efficient curing is extremely important for development of good compressive strength in any concrete structure.

02. After finishing concreting, curing shall be done by damping concrete at least for one week after placing. Floor & vertical surfaces shall be covered with a layer of old gunny bags or similar absorbent material and kept constantly wet. Curing operations shall begin as soon as the concrete has attained initial set. All materials and facilities for curing concrete shall be on hand and ready for use before concrete is placed.

03. Concrete shall be kept wet and moist for at least two weeks.

21. FLOOR FINISH

Tank wall and floor finish shall be monolithic bonded.

22. REMOVAL OF FORM

01 In no circumstances forms shall be struck until the concrete reaches strength of at least twice the stress to which the concrete may be subjected at the time of striking.

02. In normal circumstances i.e. at temperature 21 C forms may be removed at the following minimum times which will be subject to the Engineer's requirement.

Wall	02 days
Columns	03 days
Beams soffits (sides)	05 days
Bottom of beams up to 6m span	14 days
Bottom of beams above 6m span	21 days
Slabs 125mm thick or less, up to 4.6m span	07 days
Slabs 125mm thick or less, above 4.6m span	14 days
Slabs over 125mm thick or, up to 4.6m span	18 days
Slabs over 125mm thick or above 4.6m span	14 days

04 All concrete shall be inspected for quality before forms are removed.

05. When struck by a carpenter's hammer it shall ring like stone.

06. Upon removal of forms the contractor shall place adequate precautions to prevent injury to the concrete by construction loads.

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07. The contractor shall be responsible for safe removal of forms and for placing adequate precaution.

23. APPROVAL OF MATERIAL

Before use, samples of all materials shall be got tested from recognized laboratory by the contractor at his won cost and the test certificate shall be furnished to the Engineer-in-charge & no material shall be used until it has been approved.

25. LABORATORY TEST

Following laboratory test shall be made by the contractor at his own cost and reports furnished to the Engineer-in-charge.

Sn	Material	Lab test	Test method
01	Cement	Physical & Chemical test	IS 269-445
02	Coarse & Fine Aggregate	i) Gradation ii) Deleterious constituents iii) Moisture Content iv) Bulking of fine aggregate (for volume batching)	IS 2386 (part-I) IS 2386(part-I) IS 2386(part-III) IS 2386(Part-III)
03	Coarse aggregate	i) Los Angles abrasive values (aggregate impact valve) ii) Soundness iii)Alkali aggregate reactivity	IS 2386(part-IV) IS 2386(part-V) IS 2386(part-VII
04	Water	Chemical test	IS 456
05	Concrete	i) Workability (Slump or compacting factor test) ii) Concrete strength	IS 1199 IS 516
06	Bars and Rolls	i) Tensile Strength	IS 432 (Part-I)

26 FIELD TEST

01 The contractor shall provide all equipments and make all arrangements for fields tests to exercise proper quality control over work specially for test mentions as S.No.2(ii) and S.No. 5 mentioned under para 28.0.

02 Test for compressive strength of concrete.

03. Test specimens cubical in shape shall be 15x15x15cm.If the largest nominal size of the aggregates does not exceed 20mm; 10cm cubes may be used as an alternative. Cylindrical test specimen shall be 15cm in diameter and 30cm long. Smaller test specimen shall have ratio of diameter of specimen to maximum size of aggregate of not less than 3 to 1 except that the diameter of the specimen shall be not less than 7.5 cm for mixtures containing aggregate more than 5% of which retained on is sieve 480.

04 The mould shall be of metal preferable steel or cast iron and should be strong enough to prevent distortion. It shall be constructed in such a manner as to falcate the removal of the moulded specimen with out damage and shall be so machined that when it is assembled ready for use. The dimensions and internal faces shall be accurate within the permissible limits the mould and base plate shall be coated with a thin film of oil before use in order to prevent adhesion of the concrete.

05. The tamping bar shall be of steel bar 16mm in diameter 0.6 meter long and bullet pointer at the lower end.

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06. The test specimen shall be made as soon as practicable after mixing and in such a way as to produce full compaction of the concrete with neither segregation nor excessive laitance. The concrete shall be filled into the mould in layers approximately 5cm deep in placing each scoop full of concrete. The scoop shall be moved around the top edge of the mould as the concrete slides from it in order to ensure a symmetrical distribution of the concrete within the mould each layer shall be compacted by vibration. After the top layer has been compacted the surface of the concrete shall be finished level with the top of the mould using a travel & covered with a glass or metal plate to prevent evaporation.

07 When compacting by vibration, each layer shall be vibrated by means of an electric or pneumatic hammer or vibrator or by means of a suitable vibrating table until the specific condition is attained.

08. The mode and quantum of vibration of the laboratory specimen shall be as nearly same as those adopted in actual concreting operations.

09. The test specimen shall stored in a place free from vibration it should be kept in molest air of at least 90% relative humidity & at a temperature of 2702 C for 24 hours + - 1/2 hours from the time of addition of water to the dry ingredients in the fields, it should be kept under matting racks or other similar material for 24 hours + 1/2 hour from the time of adding water to the other ingredients at a temperature at a temperature range of 22 to 32 C, after this period, the specimen shall be marked and remove from the mould and unless required for test within 24 hours immediately submerged in clean, fresh water or saturated lime solution and kept there until taken out just prior to test. The temperature of water or solution shall be maintained at 27 + - C, the specimen shall not be allowed to become dry at any time until they have been tested.

10. At least 06 test samples on each day concreting should be collected and date mentioned on it subject to minimum samples as described in para 25 (05) above.

11. The contractor shall also provide all equipments and make all arrangements for field test and conduct all test as under and submit the test result to the Engineer-in-charge.

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E.N.C. BHOPAL CIRCULAR NO. 236 DATED 21.05.1997

OFFICE OF THE ENGINEER-IN-CHIEF

PUBLIC HEALTH ENGINEERING DEPARTMENT

MADHYA PRADESH, BHOPAL

TECHNICAL CIRCULAR

DESIGN AND CONSTRUCTION OF RCC ELEVATED RESERVOIRS

Public Health Engineering Department constructs a large number of elevated service reservoirs in rural areas, well in urban areas. Many cases of failure of these structures have come to the notice of the department. To minimize failures, it is extremely important that a uniform policy with respect to resign and construction specifications of these structures is followed throughout the State so that the quality of construction is ensured keeping in view the above objectives the following instructions are issued for strict compliance in future. the authorities responsible for enforcing these instructions will be the respective Chief Engineer of the Zones, Superintending Engineers of the respective Circles and the Executive Engineers in charge or the works.

GENERAL INSTRUCTIONS

1.0 Elevated Service Reservoirs supported on concrete shaft shall not be constructed henceforth. The officers responsible for approval of the design shall see that tanks are supported on column structure.

1.1 The R.C.C. columns supporting the tank should necessarily be round shape and not square or rectangular. The top shall i.e. water container, could be square or rectangular.

1.2 On the bottom floor of the water container cast iron or stainless steel grate should be provided over the supply outlet and scour outlet. This is essential to prevent any accident for the labour attending to periodical cleaning of the tanks. One such accident occurred at BETUL when two persons in succession were sucked into the scour pipe, the top of which could not be seen because of calcium deposits due to regular use of bleaching powder, Cast iron grates 20x20mm or stainless steel square 20x20mmcan be used with square frames on top of the outlet.

1.3 The over flow outlets should not be connected to the distribution system. Connection of over flow pipe to the distribution system can result in over filling of the elevated service reservoirs in case supply valves of the distribution system are not open. The over flow outlet should always be kept open for draining any excess storage in the tank.

1.4 It is extremely important to make arrangements for supply of sufficient water at the construction site for curing of the concrete. Continuous and efficient curing is extremely important for development of good compressing strength in any concrete structure.

1.5 It is advisable to use metal derived from igneous rock preferably of basaltic of granite origin. The coarse sand should be free from soil. This can be checked easily by half filling a transparent glass with the sand sample and the other half by clean water. Stir the sand vigorously. Silt in the sand can then be easily seen in the top water portion.

1.6 It is extremely essential that the contractors undertaking the work should have a concrete mixer with them. No hand mixing should be allowed.

1.7 In no case the concrete should be laid without vibration. It is describable to keep two concrete vibrators at the construction site so that in case of a break down the other vibrator can be used. It is desirable that the divisions have with them at least two concrete vibratos, which is an essential T & P for laying concrete.

FOLLOWING SPECIFICATIONS SHOULD BE STRICTLY FOLLOWED:

2.0 CEMENT AND CONCRETE:

2.1 Minimum Strength of Concrete:

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Municipal Corporation, Bhopal

Asstt. Engineer

Minimum strength of concrete for components of elevated tank will be as below:

Column staging M 25 (250 kg/sqcm)

Tank including roof M-30 (300 kg/sqcm)

2.2 Minimum Cement Content;

From durability considerations minimum cement content shall be as below:

Concrete M-25 (350 kg/cum)

Concrete M-30 (400 kg/cum)

2.3 Cover of Concrete

The minimum cover shall be 40mm for all the reinforcement. For foundations this cover shall be 60mm.

2.4 Cement Grade:

Grade 43 of cement should be used for columns and grade 53 for the tan portion, including the top dome cover. Only fresh cement should be used in the Tank. It is advisable to use cement manufactured by major plants and reputed firms. OPC or blast furnace slag cement should be used.

2.5 Water Cement Ratio:

Water cement ratio shall not be more than 0.45. This means 22.5 litres of water per 50 kg bag of cement.

2.6 Testing Machines for Concrete:

Compression testing machines should be installed in each rural and project divisions.

2.7 Use of Construction Chemicals:

When the water cement ratio is less, the strength and durability of concrete is good. It is advisable to use plasticizers in concrete and reduce water cement ratio up to 0.4. Plasticizers manufacture red by reputed companies is recommended.

Proportion of plasticizer to be used shall be as per the instruction manual supplied by the manufacturers.

2.8 Construction Joints:

Construction joints are treated in accordance with IS 456. The surface of already laid concrete is cleaned by water jet and cement slurry be applied. Cement mortar 10mm thick of the same proportion as in concrete by applies and then fresh concrete of the lift be laid. The form work must overlay 100mm on the already laid concrete.

Minimum Dimensions and shapes:

Circular Column	400mm
Tank Wall	200mm
Bottom Slab	150mm
Top Slab	125mm

Rectangular / square columns are not allowed. Circular shafts are also not allowed. In respect of horizontal braces, corners shall be chamfered by 40x40mm.

Footing: The depth of footing on the face of column shall not be less than 1/3rd of the spread of footing from the face.

3.0 STEEL:

3.1 Minimum Steel: Design requirements as set out in relevant codes in respect of steel shall be fully satisfied. However, following minimum steel should be provided.

a) Vertical steel in columns: 0.8% of cross sectional area actually required and 0.3% when larger section than actually required is provided.

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b) Horizontal links in columns : Not less than 8mm dia at 200mm c/c or 10mm dia not more than 300mm c/c.

c) Exposed RCC surface : on both faces when thicknes is 150mm or more.
2 kg/sqm in one direction

2 kg/sqm in perpendicular direction. The above requirement is satisfied if 8mm bars @ 200mm c/c OR 10mm bars @ 300mm c/c are provided.

3.2 Type of Steel

It is advisable to use corrosion resistant or steel such steel is not available.

3.3 Detailing of Steel

Before commencing the work. Executive Engineer In Charge should study the drawing. It must be misted that the designer provides details of the shape of each bar, its diameter, length and numbers of each category in a schedule of reinforcement. This must be incorporated in every working drawing.

3.4 Form Work:

Wherever inzte type of tanks are adopted or where there is an inclined slab having inclination steeper than one vertical to three horizontals, inside form must be provided. The procedure for such a form work shall be :

a) Place outer form work.

b) Place inner form work 300 to 450mm wide. Then concrete that portion. Then fix next strip and concrete.

c) In respect of top or bottom domes, place upper form work for lowest circular strip of width equal to 1/4th dia of dome and concrete as stated above. Then concrete central half for which top form may not be provided.

4.0 Protection Work Drainage:

At the ground level, stone pavement should be provided for an area which is 1.5 meter more than the dimension of tank on all sides. This should be laid in a slope of 1:60 from the centre and a drain be constructed around for outlet of water. It is advisable to provide fencing around the tank so that the space around the tank is not misused for any purpose. It is advisable that the tanks be white - washed every year.

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SPECIFICATIONS FOR TREATMENT PLANT

All the work shall be carried out as per relevant clause of CPHEEO Manual

(1) **Construction of Treatment Plant. The Job includes the construction Clariflocculator, Pressure filters, Proper arrangement for dosing of chemicals for pre & post chlorination.**

This work shall comprise of the following items:-

1. Chemical house and chemical feeding equipments.
2. Flash mixer.
3. Clariflocculator.
4. Rapid sand gravity filters.
5. Disinfections arrangements.
6. Laboratory & laboratory equipments.
7. Clear water pump house and sumpwell of 700 KL

(2) **TREATMENT:**

Specifications of all the treatment units shall be as per CPHEEO Manual and relevant IS standards. Bidder shall require to submit a brief write up on the treatment plant along with the TENDER. On acceptance of TENDER the successful Bidder shall submit a detailed design and drawings of the treatment plant based on CPHEEO Manual and relevant IS specifications for the approval of competent authority.

(3) **Pre & post Chlorination shall be done by providing Chlorinator of Siemens / Penwalt make**.

The chlorinator shall be 4 kg/hr cabinet mounted vaccum operated, solution feed type designed for wall mounting and shall incorporate following features :

a. V-Notch Control Mechanism with accuracy of +/- 4% of indicated flow

b. Differential Pressure regulating valve Maintains the proper vacuum differential across the V-notch orifice for consistent feed rate, regardless of changes in the operating vacuum

c. Vaccum guage for easy visual functional check.

d. Manual adjustment of dosage rate.

e. Safety vent to be piped to external atmosphere.

f. 10" Glass Rotameter

The required vaccum tubing and the vent tubing should be supplied with the chlorinator.

Injector

The chlorinator shall be driven by a ¾" fixed throat injector which would create the required operating vacuum. The injector shall have following features :

- Built-in double check valve for protection against back flooding
- The main check valves shall consists of a spring-loaded diaphragm with a spherical seat for positive sealing
- A spring-loaded poppet check to provide additional safety
- Anti-syphon arrangement for negative backpressure applications

Vaccum Regulator

The vaccum regulator shall be so designed that it opens when the vaccum is generated by the injector. On failure of water to injector, the vaccum regulator must close automatically. The regulator shall have a maximum nominal capacity of 4kg/hr with built-in internal pressure relief valve. The unit shall be cylinder mounted thereby reducing gas pressure to a vaccum immediately.

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Ton Container Mounting Kit

The system shall be supplied with mounting kit to adpat to vaccum regulator for ton container mounting. The kit shall include heater, liquid chlorine drip leg and removable strainer.

Booster Pump

The system shall be supplied with suitable booster pump to generate the desired vaccum at injector

Chlorine Tonners

Contractor shall provide 2 nos. Chlorine Tonners for proper replacement.

(4) For the testing of incoming Raw water & outgoing Clear water laboratory of suitable Class as per CPHEEO Manual shall be provided by the Contractor. The Laboratory equipments & Chemicals to be provided should be of GLAXO / RANBAXY / MERCK make.

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TECHNICAL SPECIFICATION

A. PUMPS, MOTORS AND ALLIED EQUIPMENTS

PART1: SPECIFICATION FOR VERTICAL TURBINE PUMPS FOR RAW WATER PUMPING

Design, manufacturer, supply, erection, testing commissioning of turbine pumping sets for pumping clear water including all electrical, mechanical equipment's accessories and civil works viz., foundation of pump, motor, cable, pipes, fittings for suction, delivery butterfly valves, reflex valve, specials etc., complete as per details given in this NIT.

1.0 DETAILED SPECIFICATIONS OF PUMPS SETS :

The pumps shall be vertical turbine wet pit type and non pull out design with multistage bowl assembly directly coupled with vertical hollow shaft motors.

a. 3 (Three) units of self water lubricated vertical turbine pumps sets each of capacity 183 LPS against approximate total head of 55 meters for pumping raw water at intake well.

The pumps should be KIRLOSKAR/JYOTI/WORTHINGTON/BEACON WEIR/MATHER & PLATT make only.

1.1 GENERAL SPECIFICATIONS

The pumps shall be water lubricated complete with bowl assembly, column pipe such floor discharge head, line shaft, oil tubes, foundation plate/sole plate, basket strainer, motor foot stool and all necessary accessories. The pump shall be designed so as to have a maximum flow capacity not less than 110% of the rated flow capacity. The pumps shall also be designed for continuously operation at any point of head capacity curve between 90% and 110% of pump rated flow, without undue vibration or over heating and thrust bearing should be antifriction type point head.

(A) BOWLS:

The bowl shall be made of close grained cast iron smoothly finished and free any casting defects. The bowls shall be capable of with standing hydrostatic pressure equal to twice the pressure at rates capacity or 1.5 times of the shut off head whichever is greater. The water passage in the bowls shall be smooth and shall have the Nitril rubber linked bearing with bronze shall to save bearing for the impeller shaft. Neoprene rubber lined bearing with bronze shall should be provided in the bottom of the bowl assembly also.

(B) IMPELLERS :

Impellers shall be closed type made of zinc free bronze statically and dynamically balanced. Impellers shall be free from any casting defect and shall be properly machined. All the water passage shall be smooth finished. The impellers shall be secured to shaft with tapered lock collect or key & split rings.

(C) IMPLLER SHAFT :

The impeller shaft shall be of stainless steel with renewable stainless steel sleeves at bearing portion. The impeller shaft shall be guided by bearing provided in each bowl. The butting faces of the shaft shall be machined surer to the axis and the shaft shall be chamfered an the edged. The shaft shall have a surface finish of 0.75 micron as per IS : 3078/1967.

(D) LINE SHAFT :

The line shaft shall be made of High grade carbon steel. The shafts shall be furnished with interchangeable suctions having a length of 1.25 M / 2.5 M / 3M. The butting faces of shaft shall be machined square to shaft axis and the shaft ends shall be chamfered on the edges. To ensure to correct alignment of shafts they shall be perfectly straight.

The shaft shall not have the surface roughness more than 0.75 microns as per IS : 3073/1967. The shaft shall have the adequate strength to withstand all the forces at + 10% of the critical speed of shaft.

(E) COLUMN PIPE :

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Column pipe shall be manufactured from the heavy class M.S. pipe confirming to relevant India Standard Specification. The column pipe shall not exceed 3.0 meters. in length & made of 6mm thick sheet the dia of bolts to be used in flange joints should not be less than 20mm.

(F) LINE SHAFT BEARING :

Line shaft bearings shall be designed to be lubricated by forced water. line shaft bearing shall be cutless Nitrile rubber lined bearing with bronze shell.

(G) LUBRICATION :

The pumps are water lubricated.

(H) DISCHARGE HEAD :

The discharge head shall be of standard construction cast iron as per IS:210 Gr. FG 200 and sufficiently strong to support the weight of the pump. It shall befitted with a tube tension plate for tighten up. The shaft tubes for the purpose of aligning the shafts.

(I) STUFFING BOX :

A packing gland shall be provided at the top of stuffing box. Shaft sleeves shall be provided on the top shaft. The stuffing box shall be of sufficient depth to permit adequate packing. The space between the pump motor main coupling and the stuffing box shall be sufficient to permit removal of packing gland and insertion of new packing without dismantling the pump.

(J) MOTOR STOOL :

The motor stool shall be of fabricated mild steel shall be designed to take care of all static and dynamic loads on it.

(K) PRESSURE INDICATION DEVICES :

Each pump shall be provided with pressure gauge of best quality makes to give indications of delivery pressure. The pressure gauges shall be of Borden type, dial size 150mm.

(L) LABORATORY TEST :

Laboratory pump test shall be carried out as per IS: 9137 / for each pump to assess the pump discharge V/s head, horse power and efficiency figures. The pump shall be subjected to a test pressure of 1.5 times of the shut of pressure or twice the working (rated) pressure which ever higher.

(O) FIELD TEST :

The field test shall be carried out as per IS : 1710 and 5126.

The successful BIDDER will ensure the Engineer-in-charge of work or any other Senior Engineer nominated by the Commissioner, Municipal Corporation Bhopal will inspect and witness tests conducted on the pumps and motors at manufacturer's place with respect to their characteristic and performance as specified by the department.

1.2 GUARANTEED PERFORMANCE & TECHNICAL PARTICULARS :

The contractor shall submit the details of guaranteed performance & technical particulars as desired in the Performa enclosed vide schedule's with the TENDER along with the preliminary out line drawing indicating principal dimensions & weight of pumping equipments and cross section drawing indicating the assembly of pumps & manor parts thereof with materials of constructions and special features. Complete descriptive and illustrated literature on the equipment and accessories offered.

1.3 SPECIAL NOTES FOR BIDDER :

1.3.1 Pump should be capable of throttling. The throttle point discharge should be quoted. The extent to which pump can be throttle and the corresponding discharge to be mentioned.

1.3.2 Duty point discharge should be specifically mentioned along with the head at which the same will be attained. Efficiency at different operating heads and discharge should be mentioned.

1.3.3 The accessories like surface, discharge head/underground discharge head with elbow, prelub tank with fittings, motor stand with NRR and thrust bearing housing, column assembly bowl,

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assembly, basket strainer, as per specifications shall be quoted, individually. The drawing to the scale showing the proposed arrangements for the pumps and the positions of various parts with detail drawing must accompany the TENDERs along with detailed specification, make, guarantee period etc.

1.3.4 Head capacity curve shall be rising type and shut off head must be higher than the maximum operating head for paralleled operations of pumps. Performance covers for each individual pump sets and also for the four pump sets working in parallel should be given for full load and for throttled conditions also. All pumps to be of identical in all respect.

2.0 SPECIFICATIONS FOR 415-V INDUCTION MOTORS :

2.1 TYPE :.

The motor shall be vertical hollow shaft squirrel cage type induction motors suitable to operate on 415 V, 3 Phase, 50 Cycle A.C. Supply at 1500 RPM directly coupled with vertical turbine pump. The motor shall generally confirm to latest revision of IS : 325/1978 and other relevant ISS. Duly fitted with space heater and RTDs & BTDs. The motor shall be of KIRLOSKAR, JYOTI, BHEL, CROMPTON, NGEF, make only.

2.2 VARIATION IN SUPPLY VOLTAGE :

The motors shall be capable of delivering rated out put and rated power factor with following variations :

Voltage :		± 10%
Frequency	:	± 5%
Combined	:	As per IS 325

2.3 RATED CAPACITY :

The minimum conditions rated capacity of motors shall be such that it meets the power requirements of pumps in the complete range of its operation. It shall also provide on additional power requirement on the motor. By 5% at the maximum power requirement or by 10% at the duty point of operation whichever is maximum. The contractor shall ascertain the K.W. requirement and provide the motors of suitable capacity.

2.4 ACCELERATION CHARACTERISTICS:

The acceleration characteristics of motor shall be matched with the driven equipment so that acceleration is obtained without over heating of motor.

2.5 METHOD OF STARTING :

The motors shall be designed for star/delta/soft starting at full voltage with starting current not exceeding four times the rated full load current. The motor shall also be designed for a minimum pull out torque of 200%.

2.6 CONDITION OF START :

Motor when started with the drive imposing its full starting torque under the specified supply voltage variation shall be capable of withstanding at least one successive starts from hot condition to start from cold condition without damage to the winding.

2.7 CLASS OF INSULATION :

The motor winding shall be provided with insulation conforming to thermal class "F". The maximum temperature rise of the winding shall not exceed the limits specified from class "B" insulation. The insulation can be given tropical and fungicidal treatment for successful operation of motor in hot humid tropical climate. It shall of thermos setting type and shall remain unaffected by heat. The coils shall be highly uniform with uniform insulation strength and uniform dielectric losses.

2.8 MOTOR CONSTRUCTION :

The motor construction shall be suitable for easy dismantling and reassemble at site with the help of simple over head crane. The motor shall be of core pack construction attached to the

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stator frame to facilitate easy removal and replacement of the winding for maintenance purpose. The over head for winding at both ends of the core shall be accessible for usual inspection without resorting to major dismantling.

2.9 MOTOR FRAME :

Motor frames shall be rigid fabricated steel they shall be suitably annealed to eliminate any residual stress introduced during process of fabrication and machining. Motor frame should be identical with existing Jyoti make motor 260 K.W. to maintain inter changeability.

2.10 STARTOR LAMINATIONS :

Stator laminations shall be made from suitable grade sheet steel varnished on inner side and shall be adequately designed to over heating during starting and running conditions stipulated above.

2.11 ROTOR SHORT CIRCUITING RINGS :

Rotor short circuiting and rings shall be such that it is free to move with expansion of bars without distortion. The connections of the bars to the end rings shall be made by bracing.

2.12 LOCKING ROTOR WITH STAND TIME :

Locked rotor with stand time under hot conditions at 110% voltage shall be more than starting time at minimum permissible voltage by at least two seconds.

2.13 TYPE OF ENCLOSURE & DEGREE OF PROTECTION :

The degree of protection provided by the enclosures of motor shall conform to IS: 4691. the enclosure for the motors shall be screen protected Drip Proof (SPDP) IP 23.

2.14 SHAFT INSULATION :

Suitable insulation shall be provided on shaft/bearing house to prevent shaft current. The insulation provided shall be such that it shall retain its dielectricaly properties even after its handled for number of times during dismantling and reassemble.

2.15 BEARING ASSEMBLY :

Bearing assembly shall be such that it prevents dust and water from getting to the bearing. Further, bearing lubricant shall not find access to the motor winding. The bearing assembly shall be provided with proper lubricating nipples.

2.16 EARTHING :

The motor body shall have two separate earthing terminals for earthing in compliance with I.E. Rules.

2.17 DIMENSIONS OF MOTORS :

Motors shall be properly dimensioned to have greater stability and low vibration limit.

2.18 TESTING

All the motors shall be routine tested at manufacturers workshop and test certificate shall be provided with motors.

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PART - 1 : HORIZONTAL SPLIT CASING CENTRIFUGAL PUMPS FOR CLEAR WATER PUMPING

1.1 GENERAL DESIGN CONDITIONS

The pumps shall be high head single stage horizontally split casing type to facilitate easy inspection & maintenance. The pumps shall be designed to operate satisfactorily while handling a minimum suction lift of 4.0 from all causes. 3 [Three] units of pump sets each of capacity of 174 lps against approximate total Head of 110 meters for pumping clear water from Sump to Bhopal .

The pump shall be horizontally split with the suction and delivery branches cast INLINE on the bottom half of the casing. The top half should be constructed to allow easy dismantling. There by providing the facility of inspection and repair to the equipment with out any difficulty.

The rotating elements of pumps will be dynamically balanced and over stressing should not occur due to sudden failure of power, Reverse rotation should not damage the pumps.

The pumps shall be so designed as to have a maximum flow capacity of not less than 110% of the rated flow capacity.

The pumps shall be designed for continuous operation at any point of head capacity curve between 50% & 110% of pump rates flow without under vibration or over heating.

The pumps shall be so designed as to have a stable non overloading characteristics, capacity head curve shall be continuously from shut-off point to operating point and shall be suitable for parallel operation of pumps without any haunting possibility. The shut-off head should not exceed 120% of duty point head.

The impeller adjustment shall be designed in such a way that impellers run free in any installed condition.

1.2 GENERAL SPECIFICATION

The pump shall be complete with suction pipe, foundation plate/sole plate and all other necessary accessories.

The pumps should generally comply with the requirement of following standard.

1.	IS 1520-1972	:	Horizontal Centrifugal Pumps for clear, cold and fresh water.
2.	IS 5120-1968	:	Technical requirement of Rotor Dynamic special purpose pumps.

PUMP MAKE KIRLOSKAR, JYOTI, WORTHINGTON, BEACON AND MATHER & PLATT ONLY.

1.3 PUMP CASING

The casing should be made of closed grain Cast Iron smoothly finished and smooth surface finish inside free from any casting defects capable of with standing twice the hydrostatic pressure at rated capacity or 1.5 time the shut off head. Which ever is greater. The water passage shall be completely smooth.

1.4 IMPELLERS

The pump impellers shall be of double suction type and of non-ferrous materials, preferably zinc free phosphorus, bronze,(LTBR IS318 –LTB2) designed to inherently provide dynamic-static axial balance. Design of impeller should be such as to prevent cavitations during the working condition specified. The impeller shall be statically and dynamically balanced depending on design considerations to minimum vibration at the pump bearings, thereby prolonging their working life.

1.5 PUMP SHAFT

The pump shaft shall be manufactured from high tensile carbon steel and provided with renewable zinc free bronze sleeves to protect the spindle from the water being pumped.

1.6 INTERNAL PARTS

The pump internal shall be constructed of bronze materials of suitable composition so as to provide compatibility with regard to rubbing surface. Hardness of wearing surface shall be so adjusted as to

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provide maximum economy in terms of replacement of wearing component i.e. casing neck rings shall be more soft than the impeller neck.

Facilities for gland drainage shall be provided and gland lubrication shall suitably arranged by means of providing connection from the discharge volutes.

1.7 PUMP BEARING

The pump is to be provided with suitably white metal lined split bush bearing and a deep grove ball thrust bearing to take up residual axial balance. These bearing should be oil lubricated.

1.8 PUMP COUPLING

This shall be of flexible pin type equipped with a suitable coupling guard.

1.9 SOLE PLATE

Each pump shall be provided with a heavy structural steel sole plate. Sole plate shall be provided and grouted with foundation. The sole plates shall be designed to permit removal of entire pump without disturbing sole plate.

1.10 PRESSURE INDICATION DEVICE

Each pump shall be provided with pressure gauges of good quality make to give indications of delivery pressure & vacuum pressure separately. The pressure gauges should be designed in such a way that the readings shall not be affected due to mechanical vibrations. The connections sizes shall be 12mm and diameter size 150m. In addition to above each pump shall be fitted with electronic pressure transducer with electronic digital display type indicator in control panel to indicate the delivery vacuum pressure of the pumps.

1.11 BOLTS, NUTS & WASHERS

All bolts, nuts and washers shall be of superior quality conforming to relevant Indian Standard Specification.

1.12 MATERIAL OF CONSTRUCTION

MATERIAL OF CONSTRUCTION OF PUMP SHALL BE SUCH AS TO RESIST EROSION & CORROSION. MATERIALS OF CONSTRUCTION OF VARIOUS COMPONENTS SHALL BE AS UNDER

Pump casing	:	CI
Impellers	:	Zinc free Bronze conforming to relevant IS.
Pump shaft	:	High Tensile Carbon Steel with renewable Zinc free Bronze sleeves conforming to relevant IS.
Pump Internal	:	Bronze materials of suitable composition as per relevant IS.
Sole Plate	:	Fabricated as per IS 226.
Nuts, Bolts & Washers	:	High Tensile Mild Steel conforming to relevant I.S.

1.13 INSPECTION & TESTING

All the inspection, examination and testing shall be carried out in accordance with relevant In diameter Standard Specification.

1. LABORATORY TEST

Laboratory pump test shall be carried out as per IS : 5120-1968 each pump to assess the pump discharge Vs head, horse power and efficiency figure. The pump casing shall be subjected to a pressure test of 1.5 times the working pressure at duty point.

2. FIELD TEST

The field test shall be carried out as per IS : 1520-1972 & IS : 5120-1968. These test may be witnessed by the Engineer-in-charge or his authorized representative. If they desire. The tolerance as specified in relevant IS code of practice shall not be application on the efficiency & KW out put. The contractor shall have to demonstrate the quoted efficiency of pump during testing.

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1.14 GUARANTEES PERFORMANCE & TECHNICAL PARTICULARS

The contractor shall submit the details of guaranteed performance and technical particulars as desired in the proforma enclosed vide schedule 'B' along with the TENDER & the preliminary out line drawing indicating principal dimension and weight of pumping equipment and cross-section, drawing indicating the assembly of pumps & major parts there of with materials of construction and special features, complete descriptive and illustrated literature on the equipment and accessories offered.

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PART - II

SPECIFICATION FOR 415 V INDUCTION MOTORS

2.1 TYPE

The motor shall be horizontal SOLID shaft squirrel cage type for clear water pumps suitable to operate on 415 V, 3 phase, 50 Hz. AC supply (with allowable variation of 10%) directly coupled with pumps. The rotations of clear water pumps shall be 1500 RPM. The motor rating generally conform to latest revision of IS 325-1971 and other relevant I.S.S.

2.2 VARIATION IN SUPPLY VOLTAGE

The motors shall be capable of deliver integrated output and rated power factor with following variations :

VOLTAGE	:	±10%
FREQUENCY	:	±5%
COMBINED	:	±10%
PHASE IN BALANCE	:	±5%

2.3 RATES CAPACITY

The minimum continuous rated capacity of motors shall be such that it meets the power requirements of pumps in the complete range of its operations. It shall also provide additional power requirement in the motor by 5% at the maximum power requirement or by 10% at the duty point of operation whichever is maximum. The contractor shall ascertain the KW requirement and provide the motors of suitable capacity.

2.4 ACCELARATION CHARACTERISTICS

The accelerating characteristics of motor shall be matched with the driven equipment so that acceleration is obtained without over heating of motors.

2.5 METHOD OF STARTING

The motors shall be designed for star/delta/soft/starting at full voltage with starting current not exceeding 2 times the rated full load current. The motor shall also be designed for a minimum pull out torque of 200%.

2.6 NUMBER OF START

Motors when started with the drive imposing its full starting torque under the specified supply voltage variation shall be capable of withstanding at least two successive starts from hot condition and one start from cold condition without damage to the winding.

2.7 CLASS OF INSULATION

The motor winding shall be provided with insulation conforming to thermal class F. The maximum temperature rise of the winding shall not exceed the limits specified for class 'B' insulation. The insulation shall be given tropical and fungicidal treatment for successful operation of motor in hot, humid tropical climate. It shall be of thermo-setting type and shall remain unaffected by heat. The coils shall be highly uniform with uniform insulation strength and uniform dielectric lose. The dielectric losses shall be low and the star delta measurement should be not exceed 1% at 440V.

MAKE OF MOTOR CROMPTON, KEC, ABB AND SEIMENS ONLY.

2.8 MOTOR CONSTRUCTION

The motor construction shall be suitable for easy dismantling and reassembly at site with the help of simple over head crane. The motor shall be of core pack construction attached to the stator frame to facilitate easy removal and replacement of the winding for maintenance purpose. The over head for winding at both ends of the core shall be accessible for usual inspection without resorting to major dismantling.

2.9 MOTOR FRAME

Motor frame shall be of rigid casted steel. They shall be suitably annealed to eliminate up any residual stresses introduced during process of fabrication and machining.

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2.10 STATOR LAMINATIONS

Stator laminations shall be made of suitable grade sheet varnished on either side and shall be adequately designed to avoid over heating during the starting and running conditions stipulated above.

2.11 ROTOR

Rotor should be desisted dynamically balanced and having carbon steel shaft hydraulically fitted.

2.12 LOCKED ROTOR WITH STAND TIME

Locked rotor with stand time under hot conditions at 110% voltage shall be more than starting time at minimum permissible voltage by at least two seconds.

2.13 TYPE OF ENCLOSURE & DEGREE OF PROTECTIONS

The degree of protection provided by the enclosures of motor shall conform to IS : 4691. The enclosure for the motors shall be closed air circuit air cooled (CUIDSSMT) type, having of protection I.P. 55.

2.14 SHAFT INSULATION

Suitable insulation shall be provided on shaft bearing housing to prevent shaft current. The insulation provided shall be such that it shall retain its dialectical properties even after its handling for number of times during dismantling and reassembly.

2.15 BEARING ASSEMBLY

Bearing assembly shall be such that it prevents dust and water from getting into the bearing. Further, bearing lubricant shall not find access to the motor winding. The bearing assembly shall be provided with proper lubricating nipples.

2.16 EARTHING

The motor body shall have two separate earthing terminals for earthing in compliance with I.E. RULES.

2.17 TERMINAL BOXES

Separate terminal boxes shall be provided for main-Terminals of the motors and for R.T.D. and for space heaters. The terminals box for main terminals of motor shall be segregated type suitable for 3 core. 440 V. Aluminum conductor PVC insulated armored cables. The terminal boxes shall be spacious, dust & house proof designed and properly insulated. Adequate clearance should be given between live motor terminals and covers.

2.18 TEMPERATURE DETECTORS

Motors shall be provided with embedded temperature detectors, two for each phase winding at the location where the high temperatures may be expected in the stator winding. The temperature detectors shall also be provided in bearing assembly for monitoring the bearing temperature. The temperature detectors shall be connected with digital temperature scanners with alarm and trip points in the control panel.

2.19 ANTI - CONDENSATION HEATERS

Motors shall be have space heaters suitable for 240 V. single phase 50 Hz. A.C. supply, space heaters shall have adequate capacity to maintain motor internal temperature above due point to prevent moisture condensation on insulation during shut down periods.

2.20 DIMENSIONS OF MOTORS

Motors shall be properly dimensioned to have greater stability and low vibration limits. Mounting dimensions should confirm to IS : 2254.

2.21 COUPLING TO PUMPS

The motors shall be coupled to the pumps by means of polished steel shaft and flexible coupling. The size of line shaft and flexible coupling shall be calculated on the basis of maximum combined shear stress as per the relevant IS and shall not exceed 30% of the elastic limit in tension or 10% of

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ultimate tensile stress, shaft shall be designed taking into consideration that critical speed of the shaft which shall be higher than the operating or runaway speed.

2.22 DETAILS OF MOTORS TO BE FURNISHED

The TENDERs shall furnish along with their offer, the details of efficiency, total losses and power at different loads etc. as required in the form of guaranteed performance and technical particulars of motors in schedule 'B'.

2.23 TESTING

All the motors shall be routine an type tested at the supplier's workshop in the presence of Engineer-in-charge of work or his authorized representative or a third party inspection directed by Municipal approve the design.

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PART-III CABLING AND MOTOR CONTROL PANNEL

3.1 CABLE CLEAR WATER PUMP HOUSE

In case of clear water pump house the soft starter panel of each motor of clear water centrifugal pump shall be connected in L.T. panel in the pump house, through 300sqmm 3-1/2 core armored cable. Thus in all 2 Nos. of 300sqmm 3-1/2 core armored cable shall be laid in suitable duct and as per I.E.RULE. And a loop of about 1m should be given in each cable.

3. .2 REACTOR TYPE MOTOR SOFT STARTER [MOTOR CONTROL PANEL]

TECHNICAL SPECIFICATIONS :

TYPE OF SOFT STARTER	NEUTRAL/LINE REACTOR SOFT STARTER
PRINCIPAL	SRSS[SERIES REACTOR SOFT STARTER]
APPLICABLE STANDARD	IS 3914 [MOTOR STARTER STANDARD GUIDELINE]
REACTOR	AIR CORE TYPE 100% COPPER WINDING
REACTOR CONNECTION	REACTOR TO BE IN SERIES ON LINE OF MOTORS
STARTING CURRENT LIMIT	2-3 TIMES OF FLSC IN STEPS [DEPENDING UPON LOAD TORQUE REQUIREMENT AND SETTABLE AT SITE]
HARMONIC	REACTORS USED IN SOFT STARTERS CIRCUITS OF AIR CORE SHOULD NOT DEVELOP HARMONIES IN THE CIRCUITS
DUTY CYCLE	6 NO EQUAL SPACED STARTS /PER HOUR
METHOD OF COOLING	AIR COOLED

SPECIFICATIONS FOR OTHER ITEMS SHOULD BE EQUIPPED WITH REQUIRED SWITCH GEAR PROTECTIONS AND INDICATIONS

3.3 PUMP WELL WATER LEVEL INDICATOR

One No. electrical water level indicator with alarming system shall be provided for the pump well near which the pump house of clear water has been constructed.

3.4 CIVIL WORK

1. Construction of covered cable trenches / tray from L.T. panel to panel board in pump house. The cable trenches should be covered with sand and type should be broken type connected to bridge with bolts etc. by suitable civil work and shall be covered with chequered plates of minimum thickness 7mm.
2. Construction of all other civil works required for erection of pump and motor with all foundation bolts, washers including all work pertaining to it.

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PART - IV - BUTTER - FLY VALVE

4.1 GENERAL REQUIREMENT

Each pump shall be provided with a butterfly valve in the delivery pipe, and in addition one no common butter fly valve shall be also required in manifolds of each pump house. The butterfly valve shall be flanged, water works pattern eccentrically pivoted.

The valve shall have head stock, extension rod & wheel for operation and gearing system if the size is 300mm diameter or above. The valve shall generally confirm to relevant I.S.: 51450.

4.2 CONSTRUCTION

Butter fly valve having diameter equal to the diameter of delivery line suitable for individual flange bolting of flanges of pipe, with the disc to form a section cut through a sphere, working in conjunction with a cone shaped seating in body and synthetic rubber seal ring fitted to the disc with the help of a retaining ring & stainless steel screws, shall be provided, confirming to relevant I.S. STANDARDS. The disc shaft bearing shall be off set along the pipe axis from the place of the seating so as to get an unbroken position in full closed position.

4.3 MATERIALS OF CONSTRUCTION

1.	Body	:	Close grained homogenous cast steel construction tested to 40 kg/cm2
2.	Disc	:	Same as body tested to 20 kg/cm2
3.	End housing and cover gear box housing for manual operation	:	Cast steel to grade 20 to 25 IS 210 or Cast Iron.
4.	Bearing	:	P.T.F.E. (Glass filled or carbon filled) having friction coefficient 0.04 (Note : Water itself acts as a lubricant for PTFE bearings).
5.	Stub Shaft	:	18/8 quality stainless steel AIST 304/ASTMA351 Gr. CF.
6.	Rubber Seal Ring:		For standard water works valve precision moulded nitrite rubber ring (shore hardness 55 to 65).
7.	Hardware used Inside	:	Stainless steel.
8.	Retaining Ring	:	S.G. Iron or Cast Steel Nickel plated.
9.	Inside paint	:	Black bit mastic.

4.4 TESTING

The valves shall be subjected to closed ends tests as per relevant IS standard. Test certificate in triplicate shall be furnished. If necessary, test shall be witnessed by the Engineer's representative.

Working Pressure	:			20 kg/sq.cm.
Test Pressure	:	Body	:	40 kg/sq.cm
		Seating	:	20 kg/sq.cm.
Gear Box Outside	:			1 kg/sq.cm.

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PART - V - NON RETURN VALVE

5.1 GENERAL

The non-return valves shall be single door type, free acting quick opening, giving rapid non-clam closure & with low head loss characteristics when in open position. The valves shall be provided with by passes and isolating valves conforming to relevant Indian Standard.

Specification of the valves shall generally conform to IS : 5321 (Part-II)

5.2 MATERIALS OF CONSTRUCTION

Body, Cover, Door and Hinges	:	Cast steel construction
Hinge pins, Door pins & Door Suspension pins	:	12% Chromium steel conforming to IS:1570
Bearing Bushes	:	Leaded Gun Metal Gr. 2, Conforming to IS:318
Body rings and door faces	:	Leaded Gun Metal Gr.2, conforming to IS:318

5.3 TESTING

The valves shall be subjected to closed ends tests as per relevant IS standard. Test certificate in triplicate shall be furnished. If necessary, test shall be witnessed by the Engineer's representative.

WORKING PRESSURE	:	20 KG/SQ.CM.
TEST PRESSURE BODY	:	40 KG/SQ.CM.
SEATING	:	20 KG/SQ.CM.

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PART - VI DELIVERY PIPES

6.1 GENERAL

The scope of the work is providing, laying & jointing of all delivery pipes, specials valves of all the pump and their connection to the common manifold as shown in drawing inclusive of the jointing of the manifolds to the respective conveyance mains fixing with one main butterfly valve.

1. The contractor shall design and fabricate the common manifold which would be made out of MS 6mm thick plates conforming to IS : 226 in such a way that it gives minimum frictional loss of head to the flow of water and also avoid cavitations or vortices in the manifold. The manifolds should be in line and coated with suitable material to protect it from corrosion in case of clear water ultimate carrying capacity shall be 29.00 MLD.
2. The contractor shall provide an expansion joint of his own design duly approved by the Engineer-in-charge.
3. Flanged joints shall be adopted for valves and butt welding joints or flanged joints in jointing of delivery pipe with dismantling joints.
4. Concrete saddles for valves and thrust blocks shall be provided by the contractor as per the design and drawings to be furnished by the contractor and subsequently approved by Engineer-in-charge.

6.2 MATERIAL OF CONSTRUCTION

All the pipes of works shall be fabricated out of steel plates conforming to IS:226-1962. The fabrication of pipes shall generally conform to IS : 3589-1966.

6.3 TESTING

The pipes and common manifold shall be hydraulically tested to a pressure of 2 times the working pressure. Test certificate to that effect shall be furnished by the contractor.

The Engineer-in-charge witness the above test if so desired, the contractor shall arrange for such test in presence of Engineer-in-charge.

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PART - VII RATING AND NAME PLATES

7.1 RATING PLATE

Each main and auxiliary item of plate shall have permanently attached to it a rating plates in a conspicuous position. This shall be a non-corrodible material preferably chromium plates steel. The inscription shall be engraved in black on the plate.

7.2 NAME PLATE

1. Each item of plant shall be provided with a name plate or label designating the service of the particular equipment. The shape and size of the plate and inscription shall be approved by the Engineer-in-charge.
2. Such name plate shall be non-corrodible material preferably chromium plated steel having engraved black lettering.
3. In case of indoor equipment like circuit breakers, starters etc. the plate shall be of transparent plastic material with black lettering engraved on the back.
4. The name plate shall be screwed to the body of the equipment.

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DETAILED TECHNICAL SPECIFICATION FOR 1350 KVA /suitable ELECTRIC SUB STATION (1 nos. for Raw water)

1. LOCATION OF WORK:-

Providing, supplying, erection and commissioning of Transformer of 1350 KVA or suitable rating to be installed in an electric sub-station of 33KV/54 KVA located at Intake well.

2. SCOPE OF WORK

The Scope of works includes design, supply erection construction commissioning and testing of 1350 KVA, 33 KV/1350 KVA electric sub station (as per I.E. rules and specification) which mainly includes supply of transformer, outdoor, sub station structure, cables, other electrical equipment, accessories, and other allied required civil work etc. complete.

The details specifications of the proposed work are given below. However specifications laid down in relevant in diameter standards shall be strictly followed.

2.1 SUB STATION STRUCTURE AND ASESSORIES. :-

33/3.3KV outdoor substation comprising of 1 pole substation structure made of Double M.S. Girders & channels of adequate section (not less than ISHC 200x10 and ISMB 100x50) and length, with provision,. of 33 KV lightening arrester, A.B. switch, D.I. set, disc and post insulators with hardware sub station premises as per I.e. rules. Structure shall be complete with necessary painting of primary red oxide and finished with two coat of aluminum paint.

2.2 TRANSFORMER

One number transformer of rating 1350 KVA, 33/0.44 KV 3 phase, double, would Dy 11, ONAN cooled out door distribution transformer with off load top changer as per IS 2026 (with all standard fitting and bi directional rollers and accessories as per I.E. rules) and as per other detailed specification. The transformer shall be fixed on suitable plinth as per I.E. rules.

2.3 EARTHING SYSTEM:-

Double earthing of entire electrical system connected to earthing plates buried in ground and surrounded in charcoal and salt up to adequate depth. The contractor shall have to carry out earth continuity tests earth resistance measurement and all other required test in the presence o the Engineer-in-charge, which are necessary to prove that complete job. If earthing system is

Already in working conditions then rectifications if required is to be done only

2.4 CIVIL WORK:

All related civil works such as construction of transformer plinth, foundation of sub station structure, partition wall between transformer, earth pits, cable trenches/cable trays, cable markers, foundation of Fencing pole structure, providing and spreading 40mm B.T. metal as per I.E. Rules complete job.

2.5 FENCING FOR 33 KV SUBSTATION YARD.

Industrial yard fencing arrangement using 65 mm x 6mm angle iron post complete as per I.E. rules complete job if require at site

2.6 LIGHTING :-

Sub station yard lighting provision in panel.

2.7 SUPPLY OF SAFETY DEVICES:-

Supply of safety devices like rubber mating, hand gloves, first Aid box, danger boards, first Aid, charts, 0.6 Kg. Capacity Co_2 type fire extinguishers and sand buckets etc. complete required as per specification and I.E. rules One set.

2.8 OPERATION OF SUBSTATION :

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The contract include as operation and maintenance of the contract includes sub station after commissioning and training to departmental staff for 7days complete job.

2.9 **ANY WORKS** Equipment not specified in particular but considered necessary to complete the work as per specification and I.E. Rules are also include in this TENDER and scope of works.

2.10 **PANEL INSTLATIONS ;**

Panel is to be installed in substation or at place specified by the department.

3.0 **IMPORTANT CONDITIONS :-**

3.1 The BIDDER shall submit the brand names, & efficiencies at various at various points and design calculation for each and every equipment so as to assess and decide suitable offer.

3.2 A licensed class A electrical contractor authorized under I.E. Rules shall only carry out the work.

3.3 The Successful BIDDER on award of contract shall have to prepare and submit the detailed drawing of the work duly approved by the Chief Electrical Inspector and Electrical Adviser, Govt. of M.P. After completion of work the representative of the Chief Electrical Inspector and Electrical Adviser shall inspect the same. The inspection the same. The inspection fee shall be born by the contractor and electrical sub station shall be charged only after approval and permission of the competent authority as per I.E. Rules.

3.4 Supply and inspection of all the equipments shall be as per relevant BIS/ I.S. Specification and latest I.E. Rules.

3.5 Make, Materials, Technical specification, Circuit diametergrams and connection details of each and every equipment and its major parts offered should be clearly specified in the TENDER.

3.6 Test certificates guarantee, certificate and operation manual shall be submitted along with the supply of equipment.

3.7 After commissioning of all the equipment successful trial will have to be given for at least 72 Hours .

3.8 Maintenance and training of department staff:-

After installation, commission and official testing of electric sub station and other equipment satisfactorily, the contractor shall have to run and maintain and electric sub station to the complete satisfaction of the Engineer in charge for a period of at least 7 days round the clock through his experienced and competent staff under supervision of his experienced and qualified engineer.

3.9 Any work equipment not specified in particular but considered necessary to complete the works as per specification and I.E. Rules are also included in this TENDER.

4. **DESIGN DATA:-**

4.1 All the equipment shall be designed for operation in tropical humid climate subject to heavy rainfall and frequent thunderstorms with ambient air temperature of 50 deg. c (max)

4.2 The single line diameter gram of proposed 33 KV sub station, main electric panel board bus bar is shown in the enclosed drawing. The proposed site plan showing the relative location of sub station with respect to pump house are shown in separate drawing , which can be seen in office. The above drawing is enclosed only for the guidance of the BIDDER.

4.3 The rating and specification of transformers and other electrical equipment shown in the drawing and specification are indicative only The BIDDER shall checkup the rating of the equipment and satisfy thoroughly regarding their adequacy.

4.4 All the materials used in this work must be strictly in accordance with the relevant I.S. specification and I.E. rulers.

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4.5.1 On completion of work, the contractor shall submit the completion drawing. Circuit diameter grams and detailed electrical mechanical drawing of the equipments and the maintenance manuals in form as desired by the engineer-in-charge.

5. DETAILED TECHNICAL SPECIFICATION:

5.1 TRANSFORMER :-

(a) **1350 KVA 33/3.3 KV** 3 phase, 50 Hz Oil immersed, Natural self cooled type Onan, core type with class "A" insulation, double wound with off load tape changer outdoor distribution transformer with accessories designed and manufactured with particular reference to tropical condition conforming to IS 1026: 1981 as per IE rules and as per detailed specification.

Rating	1350 KVA OR OF SUITABLE RATING
No load voltage ratio	(HV/LV 33 KVA/3.3 KV
Winding materials	copper
No of phases	Three
Vector	Dy 11
Connection On (HV/LV)	Delta Star
Frequency	50 Hz
Installation	Outdoor
Type of cooling	Onan
Temperature rise in oil by thermometer	45 Deg. C
In winding of resistance	55 Deg. C
Terminal Arrangement	
*(a) Primary	Bare
(b) Secondary	Weather proof bare bushing
Type of tap changer	Off load top changer
Tapes step on HV	+5% - 5% in steps of 2.50%
Fitting and accessories	shall be provided as per IS 2026: 1981

5. 2 CONSTRUCTION:

CORE

The core shall be of C.R.G.IO. annealed steel materials having low losses and good grain properties, bolted, together to the frames firmly to prevent vibration and noise,

WINDING:-

Winding shall be made out of electrolytic grade copper paper covered wire strips. Generally H.V. winding shall be cross order of disc type with paper covered conductor and the L.V. winding, shall be cylindrical type disc or helical type depending upon the voltage currents.

TANK :-

Transformer tank shall be robust construction and shall be fabricated with M.S. plate proper enforcement shall be provided so as to ensure that no building occurs during service.

FITTING AND ACCESSORIES:-

All the fitting and accessories as mentioned below shall be of the good quality and confirming to Relevant IS specification.

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1. Rating and diameter gram plate.
2. Earthing terminals
3. Lifting lugs
4. Off load tape changing switch
5. Drain cum sampling valve wit plug.
6. Conservator with oil level gauge
7. Thermometer
8,. Air release plug.
9. Silica gel breather.
10. Bucholes Relay.
11. Radiametertor.

PAINTING:-

Thank in side, core clamp and other fitting exposed to the oil shall be painted by heat and oil resistant paint. the exterior of the transformer and other ferrous fitting shall be first thoroughly cleaned, scraped and ten given two coats of zinc chromate, red oxide, primer following by two finishing coats of synthetic enamel paints as per shade No.631, of IS 5/1978.

DRAWING :-

Three copies of GA drawing showing details dimension and position of fitting and accessories shall be submitted with equipment.

i. Indicating lamps for breaker ON/OFF Spring charge trip circuit healthy.
ii. Alarm Bell for S/C and E/F indication.
iii. Push button for test /reset/acknowledge.

7 PANEL BOARD

The LT AC Switch Board shall be of volts, 3 phase and neutral 50 Hz Distribution board, indoor type, sheet clad by 1.5mm thick CRC sheet over S channel structure frame, floor mounted free standing type, cubical pattern, dust & vermin proof having protection group IP 53, and shall comprise of following.

1 Nos. of incoming ACB OF suitable rating make L&T siemens, Alsthan C&S and Schinder

1Nos. SFU OF suitable rating

- 1Nos. off 144 sq. mm flush tie ampere meter with selector switch.
- 1Nos. set of Indication Lamps for all three phase, On OFF auto Trip .
- 1 Nos. set of CT for protection and metering.
- 1 Nos. of solid state Triple pole on directional IDMTL over load and earth fault relay.
- The bus bar shall be suitable for 3 Phase and applicable amps,. the bus bar shall be with colored insulated sleeves. The supports shall be suitable spaced to give mechanical rigidity for with standing stress due to system fault,. The panel compartments shall have adequate space for termination of incoming and outgoing feeder cables equipped with gland, lugs etc.

8 CABLES:-

Power cable of PVC, aluminum armored cable of size 3x400mmx3,5 with require lugs gland. Total to be considered for lump sum offer is 20 meter. each from transformer to panel.

Control cable of PVC, copper cable of size 1 x 2.5 sq.mm x 3 and 6 core with required lugs, glands. Total length to be considered for lump sum offer is 50mtr, for various connections.

Units rates of cable to be quoted for any addition as required at time of execution.

9 SUB STATION STRUCTURE ADN ACCESSORIES.

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9.1 33/0.44 KVA outdoor substation comprising of suitable substation structure and other required sub station material as given below:

9.2 SUB STATION STRUCTURE :-

Sub station structure extension made of 1 Nos. of two pole structure made out Two Nos. of 200xc 100mm M.S. channels fabricated and welded using 33 x 5 mm. M.S flat to make one pole of substation total substructure have our poles MS channels shall be not less than 100x 50mm and length as required to complete the sub station structure, clamps, nut bolts and other necessary MS Material as required for construction of sub station structure. These structures shall be made as per detailed drawing enclosed.

9.3 3 KV Lightning arresters:

Station class 1- KA rating, single pole lightning arrester for use of 33 KV solidly ground natural system and suitable for pedestal mounting complete with bolts and nuts. One SET of three numbers.

9.4 AIR BREAK SWITCHES:-

Air break switches 33 KV 400 amp. Triple pole with earth blades, gang operated, double break isolators suitable for horizontal mounting, complete with locking arrangement in both On/Off position post type insulators operating pipe arcing horns, hand operated machismo. The isolators will be complete with fixing bolts and nuts. all hardware parts shall be hot dip Galvanized.

9.5 DROP OUT FUSES:-

Drop out fuses 33 KV out doors drop out fuse cut out of expulsion type compete with insulators mounted on bas channels and suitable for cross arm mounting for a working current up to 400 amps. complete with fuse holders, fuse elements and operating rod. All hardware pa5rts shall be hot dip galvanized Each set comprise for 3 Mps single pole drops fuses. The drop out fuse set shall be for control of 500 KVA Transformer Primary One set.

9.6 Post pin and Disc insulators

33 KV disc insulator complete with hardware.

33 KV pin post complete with GI pin

9.7 ALUMINUM TUBULAR BUSBAR.:-

Aluminum tabular bus bar required for internal connection of 33 KV equipment such as transformer Isolator, DO fuse etc. Jumpers, Terminal connectors connection supports. insulators bolts nuts etc complete

9.8 PAINTING

Structure shall be complete with necessary painting of primary red oxide and finished with two coat of aluminum paint.

10 SHIFTING OF TRANSFORMER

There is no work of shifting of old transformer.

11 CIVIL WORK

All related civil work such as construction of transformer plinth foundation of sub station structure earth pits cable trenches/ cable trays, cable markers, providing and spreading 40 mm BT metal as per IE rules complete job.

12 EARTING SYSTEM:-

Double earthing of entire electrical system connected to earthing plates buried in ground and surrounded in charcoal and salt up to adequate depth, where damaged earth is encountered at a distance of 2 meters from any permanent structure shall be provided. It shall also included digging of pits earth plates as per latest IS, watering pipe with funnel of required length and diameter earth strip per without kinks lugs and clamps, salt and charcoal earth chamber etc as per EI rules the contractor shall have to carry out earth continuity tests, earth

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resistance measurement and all other required test in the presence of the Engineer in charge which in his opinion are necessary to prove that the system is in accordance with design specification and as per IE rules complete.

12.1 EARTHING MATERIAL

Copper earthing plate of size 3.15 x 600x 600mm 6 nos

Copper earthing strip 50x 5 mm as required

GI earthing plate of size 6.3 x 600x600mm

GI earthing strip 50 x 5mm as required for earthing arrangement

CI main hole cover for earthing pits.

GI pipe for earthing pits 50 mm diameter of length 1.5 meter

Funnel and other required earthing materials as per IE rules & IS

13 FENCING FOR 33 KV SUBSTATION YARD

Industrial type fencing arrangement using 65 mm x 6mm angle iron post each of 3 meter height fixed as required at a spacing of 2 meter with 2 meter high GI chain link wire mesh fencing of minimum opening of 75mm x 75mm 2 meter wide main gate with locking arrangement and etc complete as per IE rules complete job.

14 LIGHTING

Sub station lighting provision in pasnel is to be done.

15 SUPPLY OF SPARES

Supply of essential spares like DO fuses, HRC fuses indication lamps cable lugs for maintenance one set

16 Supply of essential tools

Supply of essential tools and equipment like DO operating rod earthing rod sets, required for operation of sub station helmet HD one set of each item.

17. SUPPLY OF SAFETY DEVICES :

Supply of safety devices like rubber mating gloves, first Aid box leather apron danger boards, first and charge 0.5 kg capacity CO2 type fire extinguisher and sand buckets etc complete required as per specification and IE rules one set.

Note : The quantities given in annexure E&F are approximate. However the contractor shall have to execute the complete works as per specification and IE rules.

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The equipment of following brand shall be required & accepted.

S. No.	Equipment	Acceptable makes
1.	Transformer	NGEF crompton Alsthom Kirlosker Voltemp btcl TESLA
2.	3 KV VCB	CROMPTON ALSTHOM AB JYOTI SIEMENS BHEL NIEPE-BANGLORE
3.	AIR CIRCUIT BREAKER	L & T SIEMENCE ABB JYOTI CROMPTON C & S
4.	CTS PTS	CROMPTON ALSTHOM UNIVERSAL JYOTI C&S
5.	44 KV LIGHTING ARRESTER	IGE OBLUM ALPRO CROMPTON
6.	RELAYS	L & T SIEMENCE ABB JYOTI C&S
7.	AIR BREAKS SWITCHES	SIL WSL KIRON TEXTILE
8.	POST AND DIS INSULATORS	SIL WSI KIRON TEXTILE ATLAS JAIPURIA JYOTI
9.	ALUMINUM TUBULAER BUSBAR	AS PER IE RULE AND AS PER RELATIVE STANDERD
10.	CABLES	FINOLEX UNIVERSAL HAVELLS NICCO CCI
11.	DROP OUT FUSES	SIL WSI KRON TEXTILE ATLAS JAIPURIA
12.	EARTHING MATERIAL	AS PER IE RULES AND AS PER RELATIVE STANDARD D
13.	SAFETY DEVICE	AS PER IE RULE AND AS PER RELATIVE STANDARD
14.	METERS	AE MECO.

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The following manufacturers are recommended to be used for the proposed work. The Bidders may substitute alternative brand names with prior approval of Engineer in charge.

Item / Component	Recommended makes
VT and Centrifugal Pump	Kirloskar / Jyoti / Mather+Platt / WPIL
Pump motor	Kirloskar / Jyoti / Crompton / ABB / Elsthom / Siemens
Sluice Valve / Scour Valve	Kirloskar / IVC / VAG / IVI
Non-return / Check Valve	Kirloskar / IVC / VAG / IVI
Kinetic Air Valve	Kirloskar / IVC / VAG / IVI
Butterfly Valve	Fouress / IVC / VAG / L&T (Audco)
Valve Actuator	Auma / Rotork / Limitork
Single faced Sluice Gate / Stop-log	Kirloskar / JASH / VAG
Flow & Pressure regulating Valve	Darling Muesco / VAG / Keystone
Electro-magnetic Flow meters – Battery operated	Emerson / Krohne Marshall / Yokogawa
Water Hammer Control	Sureseal or equivelent
D.I. pipe Specials & Fittings	Electrosteel / KISWOK / Jindal / Kejariwal
Electro-fusion & Compression fittings	Glynwed / Georg Fisher/Astore/Magnum
Chlorinators	Pennwalt (W&T), SIEMENS, Alldos
Chlorine leakage detectors	Pennwalt (W&T), Capital Control(US), Alldos
WTP Equipments : **(Bar Screen, Flash mixer, Clariflocculator, Clarifier, Pressure Sand filter, Activated Carbon filter, Chemical dosing system etc.**	Voltas / Shivpad / Triveni / Hindustan Dorr-Oliver
Power Transformers	ABB / Crompton / Emco / Siemens / Alstom
HT Switch Gear	Alstom / Jyoti / Crompton / Siemens
Vacuum Circuit Breaker (VCB)	Siemens / Schneider M.G. / Jyoti / L & T
Air Circuit Breaker (ACB)	Siemens / Schneider M.G. / Jyoti / L & T
Moulded Case Circuit Breaker MCCB	Siemens / Schneider M.G. / Jyoti / L & T
Soft starters	Siemens / Alstom / Jyoti / ABB
Relay and Contactors	Siemens / Alstom / Jyoti / ABB / L&T
Cables	Tropodur / Finolex / Asian / Gloster / Incab / Universal / Polycab
EOT crane	Hitech / Indef / Hiking / Ambika

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FOR INSTRUMENTATION, AUTOMATION AND SCADA SYSTEM :	
Programmable Logic Controllers (PLC)	Rockwell *(Allen Bradly)* / Siemens / Honeywell
Panel Enclosures and Consoles	Rittal / President / Cutler Hammer
Ultrasonic Type Level Measurement Device	Endress+Hauser / Krohne Marshall / Hycontrol UK.
Float & Board Type Level Measuring system	Nivo (Toshniwal), Endress + Hauser, Pune Techtrol
Switch fuse Disconnector	L & T, FN Type, Siemens, GEPC
Multi-Function Energy Meters	Enercon, L & T, SOCOMEC
Capacitor bank	Crompton Greaves, Khatau Junker, Malde, L &T
Cable Termination kit	Raychem, Denson, M-Seal
Battery	HBL NIFE, Exide, Amco
Battery Charger	Chaabi Electrical, Masstech
Tacho Meter on line	Kana Electric, Proton, Jay Shree Electronics
Pressure switch	Indfoss, Switzer,Tag Process Instruments
Flow switch	Switzer, General Instrument,Forbes Marshall
Pressure gauge	WAREE, WIKA, AN Instruments, Guru, Hitek
Pressure Transmitter	Emerson, Foxbro, Druck, Endress – Hauser, ABB, Honeywell Automation
Engineering cum Operator work Station	IBM, Compaq, Dell
Printer	EPSON, HP, CANNON, WIPRO
Local Supervisory Station	IBM, Compaq, Dell
HMI Software	Wincc, Rs View, Monitorpro, Intellution, Indusoft
Alarm Annunciator	Minilec, Peacon, ICA, APLAB
Uninterruptible Power Supply	HI-Real, Pulse, Tata Libert, APC, APLAB
Instruments & Control Cables	Delton, Asian, Servel, TCL, Thermopad
Receiver Indicator/Digital panel meter	Masibus, Yokogawa, Lectrotek, NISHKO, SaiTech, MTL INSTS
Intercom system	Betel, Samsung, Tata, Panasonic, Matrix
Conductivity level switch	Pune techtrol, Krohne Marshall, E+H
Multifunction power monitor	MASIBUS, L&T, ENERCON, SOCOMECH, SECURE, DAE
Temperature Scanner	SaiTech, Masibus, Nishko, Lectrotek
Analog Signal Multiplier	MASIBUS, Sai Tech, MTL INSTS, NISHKO
Portable vibration measuring equipment	Shrenk Every, IRD, STM Instrument, TIME
Portable sound measuring equipment	CENTER, MECORD, CYNGET

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Specification of Operation and Maintenance :

The successful bidder shall carry put the operation and maintenance of the project facilities for 10 years after the successful commissioning of the project. During O&M the scope of Contractor shall be as SLOU annexed with this document. Also the staffing pattern is also appended.

Municipal Corporation, Bhopal shall pay 3.50% of the sanctioned Tender cost to the bidder in the first year for Operation and Maintenance. From second year upto tenth year this amount shall be increased by 5% per annum as described below. The payment against the O&M shall be made every year on satisfactory upkeep and running of the system.

Year of Operation and Maintenance	% of the Sanctioned Tender Cost for To be paid for Operation and Maintenance of the project per annum
1st Year	3.50
2nd Year	3.68
3rd Year	3.86
4th Year	4.05
5th Year	4.25
6th Year	4.47
7th Year	4.69
8th Year	4.92
9th Year	5.17
10th Year	5.43
Total	**44.02**

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IS Code (with latest Amendments as per BIS) of practices shall be used are

S. No.	IS Code No.	Title
1.	IS 269:1989	33 grade ordinary Portland cement
2.	IS 8112:1989	43 grade ordinary Portland cement
3.	IS 12269:1987	53 grade Ordinary Portland cement
4.	IS 1489:1991	Portland pozzolana cement
	Part I:1991	Fly ash based
	Part II:1991	Calcined clay based
5.	IS 1786:1985	High strength deformed steel bars and wires for concrete reinforcement
6.	IS 875:1987	Code of practice for design loads for building structure
	Part I:1987	Dead loads
	Part II:1987	Imposed loads
	Part III:1987	Wind loads
	Part IV:1987	Snow loads
	Part V:1987	Special loads and load combinations
7.	IS 13920:1993	Ductile detailing of reinforcement concrete structures subjected to seismic forces
8.	IS 1893:2002	Criteria for earthquake resistant design of structures
9.	IS 456:2000	Code of practice for plain and reinforcement concrete(third revision)
10.	IS 457: 1957	Code of practice for general construction of plain and reinforcement concrete for dams and other massive structure.
11.	IS 1343:1980	Code of practice for pre-stressed concrete (first revision)
12.	IS 3370:1965	Code of practice for concrete structure for the storage of liquids.
13.	Part 1:1965	General requirement
	Part 2:1965	Reinforced concrete structure
	Part 3:1967	Pre-stressed concrete structures
	Part 4:1967	Design tables
14.	IS 6518:1972	Code of practice for control of sediment in reservoirs
15.	IS 5330:1984	Criteria for design of anchor block for penstock with joints (first revision)
16.	IS 7357:1974	Code of practice for structural design of tanks.
17.	IS 3913:1966	Suspended sediment load samplers
18.	IS 3917:1966	Scoop type bed material samplers.
19.	IS 4890: 1968	Method for measurement of suspended sediment in open channels.
20.	IS 4926:1976	Ready mix concrete (first revision)
21.	IS 6295:1986	Code of practice for water supply and drainage high altitude and/or sub-zero temperature regions(first revision)
22.	IS 5477	Method for fixing the capacities of reservoir
	Part 1:1969	General Requirement
	Part2:1969	Dead storage
	Part3:1969	Live storage
	Part4:1971	Flood storage
23.	IS 9668:1980	Code of practice for provision and maintenance of water supply for fire fighting
24.	IS 8062	Code of practice for cathodic protection for steel structure
	Part1:1976	General principles
	Part2: 1976	Underground pipelines
25.	IS 10221:1982	Code of practice for coating and wrapping of underground steel pipes
26.	IS 8329:1977	Centrifugally cast(spun) ductile iron pressure pipes for water, gas, and sewerage
27.	IS 9523:1980	Ductile iron fittings for pressure pipes for water, gas, and sewerage

Project Manager
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Municipal Corporation, Bhopal

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28.	IS 11906:1986	Recommendation for cement mortar lining cast iron, mild steel and ductile iron pipes
29.	IS 12288:1987	Code of practice for laying of ductile iron pipes
30.	IS 4984:1987	HDPE pipes for potable water supplies, sewage and industrial effluents(third revision)
31.	IS 7634 Part2:1975	Laying and jointing polyethylene(PE) pipes.
32.	IS 8008	Injection moulded HDPE fittings for potable water supplies
	Part1:1976	General requirement

NOTE:- Quality assurance program of the manufacturer shall have to be enclosed with the Tender along with BIS registration.

Tapi Prestressed Product...

Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Annexure - F

Form of Bank Guarantee for Performance Security
(To be used by approved scheduled commercial banks)

Date
Contract No. and Title
Bank's name with Branch and Office
Beneficiary (name of Purchaser)

1. In consideration of the Commissioner, Municipal Corporation Bhopal (hereinafter called the COMMISSIONER) having agreed to exempt..... hereinafter called the said contractor(s) from the demand under the terms and conditions of an NIT No..... dated..... and consequent agreement dated ..... mane between..... and ..... for the work (Name of work ..... (hereinafter called the said agreement) of security deposit for the due fulfillment by the said contractor(s) of the terms and conditions contained in the said agreement, on production of a Bank Guarantee for Rs. ..... (Rupees .... only.)

   We(*) ..... (hereinafter to as 'the Bank') at the request of the said contractor(s) do hereby undertake to pay to the govt. and amount not exceeding Rs..... against and loss or damage caused to or suffered or would be caused to or suffered by the COMMISSIONER by reason of any breach by the said contractor(s) of the terms or conditions contained in the said agreement..

2. We (*) ..... do hereby undertake to pay the amount due and payable under this guarantee without any demure merely on demand from the COMMISSIONER stating the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the COMMISSIONER by reason of breach by the said contractor(s) of any of the terms or condition contained in the said agreement or by reason of the contractor(s) failure to perform the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due payable by Bank under this guarantee. However our liability under this Guarantee shall restricted to an amount not exceeding Rs.....

3. We undertake to pay to the COMMISSIONER any money so demanded not withstanding any dispute or dispute raised by the contractor(s) in any suit or proceedings pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the contractor(s) shall have no claim against us for making such payment.

4. We (*) ..... further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of said agreement and that it shall continue to be enforceable till all the dues of the COMMISSIONER under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till the City Engineer, Municipal Corporation, Bhopal certified that the terms & conditions of the said agreement have been fully and properly carried out by the said contractor(s) and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the (here indicate a date which the 10 months beyond the date of communication of acceptance of TENDER) ..... We shall be discharged from all liability under the guarantee.

5. We (*) ..... further agree with the COMMISSIONER that the Corporation shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms & conditions of the said agreement or to extend time of performance by the said contractor(s) from time to time or to postponed for any time or for time to time any of the power exercisable by the COMMISSIONER against the said contractor(s) and for bear or enforce any of the terms & conditions relating to the said agreement and we shall not be relieved from our liability of reason of any such variation, or extension being granted to the said contractor(s) or for bearance, act or commission on the part of the Government of any indulgency the govt. to the said contract(s) or by any such matter or thing whatsoever which under the law relating to securities would, but for this provision have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the bank or the Contractor(s).

7. We (*) ..... lastly undertake not to revoke this guarantee during its currency except with previous consent of the COMMISSIONER in writing.

Date the ..... day of .....

for (*) .....

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Distribution Project)
Municipal Corporation, Bhopal

ANNEXURE -G

SAFETY CODE

1. **Scaffolding :**

(i) Suitable scaffold should be provided for workman for all works that cannot safety be done from the grounds or from solid construction except such short period work as can be done safely from ladders. When a ladder is used extra Mazdoor shall be engaged for holding the ladder for carrying materials as well suitable foot holds and hand holds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1/4 to (1/4 Horizontal and 1 Vertical).

(ii) Scaffolding or staging more than 3.5 M above ground floor, swung or suspended from an overhead support or erected with stationery support shall have a guard rail properly attached, bolted, braced or otherwise secured at least 1 meter high above the floor platform of such scaffolding or staging and extending along the entire length of the ends thereof with only such opening as may be necessary for the delivery of the materials. Such scaffolding or staging shall be fastened as to prevent it from swaying from the building of structure.

(iii) Working platform gangways and stairways should be so constructed that they should not sway unduly or unequally and if the platform of the Gangway or the stairway it more than 3.54 meter above ground level and or floor level they should be closely boarded, should have adequate width and should be suitably fenced as described (ii) above.

(iv) Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the falling of persons or materials by providing suitable fencing or railing whose minimum height shall be 1 meter.

(v) Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable ladder shall be over 9 meter in length while the width between side rails in ring ladder shall be no case be less than 0.3 meter for ladder upto and including 3 meter length. For longer ladder this width should be increased at least 2 cm. for each additional meter of length. Uniform step spacing shall not exceeding 0.3 wt. Adequate precaution shall be taken to prevent danger from electrical equipment. No material on any of the work site shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall also provide all necessary fencing and lights to protect the public from accident and shall be bound to bear the expenses of defence of every suit action or other precautions of law that may be brought by any person for injury sustained owing to neglect of the above and to pay any damages and costs which may be awarded in any such suit action or proceeding to any such person or which may with consent of the contractor be paid to compromise any claims by any such person.

2. **Excavation and Trenching :** All trenches 1.2 meter or more in depth, shall at all time be supplied with at least one ladder for each 30 meter in length of fraction thereof. Ladder shall be extended from bottom of the trench to at least 1 meter above the surface of the ground. The side of the trenches which are 1.5 meter or more in depth shall be stopped back to give suitable slopes or securely held by timber bracing so as to avoid the danger or sides to collapse. The excavated material shall not be placed within 1.5 meter of the edge of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.

3. **Demolition:** Before any demolition work is commenced and also during the process of the work -

(a) All roads and open areas adjacent to the work site shall either be closed or suitably protected.

(b) No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM Water Distribution ...
Municipal Corporation, Bhopal

(c) All precautionary steps shall be taken to prevent danger to persons employed from risk of fire or explosion of flooring. No floor roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.

4. **Painting :** All necessary personal safety equipment as considered adequate by the Engineer-in-Charge should be kept available for the use of person employed on the site and maintained in a condition suitable for adequate steps to ensure proper use of equipment by those concerned.

(a) Workers employed on mixing asphalting materials cement lime mortars shall be provided with protective footwear and protective goggles.

(b) Stone breakers shall be provided with protective goggles and protective clothing's, and seated at sufficiently safe intervals.

(c) Those engaged in welding works shall be provided with welder's protect.

(d) When workers are employed in sewers and manholes which are in use the contractors shall ensure that the manholes covers are open and are ventilated at least for an hour before the work shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public.

(e) The contractor shall not employed man below the age of 18 and women on the work of painting with products containing lead in any form whenever men above the age of 18 are employed on the work of lead painting the following precaution should be taken :

(i) No paint containing lead or shall be used except in the form of paste or ready made paint.

(ii) Suitable face marks should be supplied for use by the workers when paint applied in the form of spray or a surface having lead paint dry rubble and scrapped.

(iii) Overhauls shall be applied by the contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessations of work.

5. **Drawing :** When the work is done near any place where there is risk of drawing all necessary equipment should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment for all injuries likely to be sustained during the course of the work.

6. **Machines :** Use of hoisting machines and tackle including their attachments anchorage and support shall conform to use the following standard or condition.

(a) These shall be good mechanical construction, sound material and adequate strength and free from patent defect and shall be kept in good repair and in good working order.

Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength and free from patent defects.

(b) Every crane driver or hoisting appliances operator shall be properly qualified and no persons under an age of 21 years should in-charge of any hoisting machine including any scaffold which or give signals to the operator.

(c) In case of every hoisting machine and every chain ring lowering or as means of suspensions, the safe working load shall be ascertained by adequate means. Every hoisting machine and gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load each safe working load of the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for load purpose of testing.

(d) In case of department machine the safe working and load shall be notified by the Electrical Engineer-in-Charge. As regards contractor machine the contractor shall notify

Tapi Prestressed Products Ltd.

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Authorised Signatory

the safe working load of the machine to the Engineer-in-Charge, whenever he brings any machinery to site of work and get verified by the Electrical Engineer concerned.

(e) Motors, gearing Transmission, Electric wiring and other dangerous parts of the hoisting appliance should be provided with efficient safe guards and with such means as well reduce the minimum of the risk of accidental descent of the load, adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load be coming accidentally displaced. When workers employed on Electrical installations which are already unregistered, insulating mats, wearing apparel such as gloves sleeves and boots as may be necessary should be provided, the workers should not wear rings, watches and carry keys, or other materials which are good conductors of electricity.

7. All scaffolds, ladders and their safety device mentioned or described herein shall be maintained in safe condition and no scaffold ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work.

8. These safety provisions should be brought to the notice of all concerned by display on a Notice Board at prominent places at the work spot. The persons responsible for compliance of the safety code shall be named therein by the contractor.

9. To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangement made by the contractor shall be open to inspection by the Labour Officer, Engineer-in-Charge, or the Department or their representatives.

10. Notwithstanding the above clause (1) to (9) there is nothing in these to exempt the contractors to exclude the operations of any other act or rule in force in the Republic of India.

Project Manager
SNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Authorised Signatory

Annexure – H

|| AFFIDAVIT ||

(On Non Judicial Stamp of Rs. 100)

I/we _____ who is/ are _____ (status in the firm/ company) and competent for submission of the affidavit on behalf of M/S _____ (contractor) do solemnly affirm an oath and state that:

I/we are fully satisfied for the correctness of the certificates/records submitted in support of the following information in Tender documents which are being submitted in response to notice inviting e-TENDER No. _____ for _____ (name of work) dated _____ issued by the _____ (name of the department).

I/we are fully responsible for the correctness of following self certified information/ documents and certificates:

1. That the self certified information given in the Tender document is fully true and authentic.
2. That:
   a. Information regarding financial qualification and annual turn-over is correct.
   b. Information regarding various physical qualifications is correct.
3. No close relative of the undersigned and our firm/company is working in the department.

OR

Following close relatives are working in the department:
Name _____ Post _____ Present Posting _____

Signature with Seal of the Deponent (Bidder)

I/ We, _____ above deponent do hereby certify that the facts mentioned in above paras 1 to 4 are correct to the best of my knowledge and belief.

Verified today _____ (dated) at _____ (place).

Signature with Seal of the Deponent (Bidder)

Note: Affidavit duly notarized in original shall reach at least one working day before opening of the Tender, by 15.00 hrs.

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Annexure – I

Envelope – B, Technical Proposal

Technical Proposal shall comprise the following documents:

Sno	Particulars	Details to be submitted
1	Organizational Details	Format: I-1
2	Valid Registration of Bidder in appropriate class through Centralized Registration of Govt. of MP	Registration No. _____ Date_____ (Scanned copy of Registration to be uploaded)
3	Experience – Financial & Physical	Format: I-2
4	Annual Turnover	Format: I-3
5	List of technical personnel for the key positions	Format: I-4
6	List of Key equipments/ machines for quality control labs	Format: I-5
7	List of Key equipments/ machines for construction work	Format: I-6
8	Litigation History	Format: I-7

Note:

1. *Technical Proposal should be uploaded duly page numbered and indexed.*
2. *Technical Proposal uploaded otherwise will not be considered.*
3. *All the documents/ information enclosed with the Technical Proposal should be self attested and certified by the Bidder. The Bidder shall be liable for forfeiture of his earnest money deposit, if any document / information is found false/ fake/ untrue before acceptance of Tender. If it is found after acceptance of the Tender, the Tender sanctioning authority may at his discretion forfeit his performance security/ guarantee, security deposit and enlistment deposit.*
4. *The Bidder shall also furnish an affidavit duly notarized in the format given in Annexure 4 on non judicial stamp of Rs. 100/- regarding correctness of the information furnished and documents submitted with the Tender and technical proposal.*
   Original affidavit shall be submitted 30 minute before the specified start time and date in key dates for opening of technical proposal.
5. *The Bidder shall furnish the following undertaking as part of the technical proposal on its official letterhead duly signed with proper seal.*

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Format: I-1

ORGANIZATIONAL DETAILS
(To be enclosed with technical proposal)

S. No.	Particulars	Details
1.	Name of Organization/ Individual	
2.	Entity of Organization Individual/ Proprietary Firm/ Partnership Firm (Registered under Partnership Act)/ Limited Company (Registered under the Companies Act–1956)/ Corporation	
3.	Address of Communication	
4.	Telephone Number with STD Code	
5.	Fax Number with STD Code	
6.	Mobile Number	
7.	E-mail Address for all communications	
	Details of Authorized Representative	
8.	Name	
9.	Designation	
10.	Postal Address	
11.	Telephone Number with STD Code	
12.	Fax Number with STD Code	
13.	Mobile Number	
14.	E-mail Address	

Note: *In case of partnership firm and limited company certified copy of partnership deed/ Articles of Association and Memorandum of Association along with registration certificate of the company shall have to be enclosed.*

Signature of Bidder with Seal
Date: _____

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Format: I-2

FINANCIAL & PHYSICAL EXPERIENCE DETAILS

A. Financial

Requirement:

Details of successfully completed similar Works:

To be filled in by the contractor:

i. Details of successfully completed similar works shall be furnished in the following format.

ii. Certificate duly signed by the employer shall also be enclosed for each completed similar work.

Agreement Number & Year	Name of Work	Date of Work Order	Date of Completion	Amount of Contract	Employer's Name and Address
I	II	III	IV	V	VI

B. Physical

Requirement:

Execution of similar items of work in any one financial year during the last 3 financial years should not be less than the minimum physical requirement fixed for the work.

Minimum Physical Requirement			**Actual Quantity Executed (To be filled in by the contractor)**		
S. No.	Item of Work	Quantity	Year – 1	Year – 2	Year – 3
I	II	III	IV	V	VI

Note: 1. *Certificate duly signed by the employer shall be enclosed for the actual quantity executed in any one year during the last 3 financial years.*

2. *Similar works:* ***The similarity shall be based on the physical size, complexity, methods technology or other characteristics of main items of work viz. earth work, cement concrete, Reinforced cement concrete, brick masonry, stone masonry etc.***

For Precast Prestressed Products Ltd.

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Format: I-3

ANNUAL TURN OVER

Requirement:

Average annual construction turnover on the construction works not less than 30% of the probable amount of contract during the last 3 financial years;

To be filled in by the contractor:

Financial Year	Payments received for contracts in progress or completed

Note:

i. *Annual turnover of construction should be certified by the Chartered Accountant.*
ii. *Audited balance sheet including all related notes, and income statements for the above financial years to be enclosed.*

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Format: I-4

List Of Technical Personnel For The Key Positions

Requirement of Technical Personnels for Key Positions						Technical Personnels for Key Positions Available with Bidder						
S. No	Key Position	Minimum requirement	Qualification	Age	Similar work experience	Area of Work Experience	S. No.	Name of Personnel	Key Position	Qualification	Age	Similar work experience	Area of Work Experience
1	Team Leader	01	The team leader should have a post graduate degree in engineering	40 +	At least 10 years	Experience in designing, construction, supervision, operation and maintenance of Water Supply Projects of the same capacity.							
2	Engineer	02	He/she should have a graduate/ post graduate degree in civil engineering	25 +	At least 5 years in executing civil projects	Prepare the detailed design and estimates, supervise the construction and provide necessary operation and maintenance of major civil works specially in Water Supply Projects of the same capacity.							
3	Field staff1	01 min	The field staff should be a Diploma holder / graduate in civil engineering	25 +	At least 3 years in similar areas	Undertake necessary surveys and support in construction and/ or supervision							

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Water Di... ect)
Municipal Corporation, Bhopal

Format: I-5

List Of Key Equipments/ Machines For Quality Control Labs

Minimum requirement			Available with the Bidder	
S. No.	Name of Equipment/ Machinery	Quantity	Name of Equipment/ Machinery	Quantity
1	Digging tools like pick axe, shovel, etc.	One set		
2	IS Sieves Nos. with lid and pan (90 mm, 80 mm, 63 mm, 53 mm, 45 mm, 37.5 mm, 26.5 mm, 19 mm, 13.2 mm, 11.2 mm, 9.5 mm, 4.75 mm, 2.8 mm, 5.6 mm, 3.35 mm, 2.36 mm, 600 Micron, 425 Micron, 300 Micron, 150 Micron, 180 Micron, 90 Micron and 75 Micron)	ONE SET		
3	Sand Pouring Cylinder with tray complete for field Density test	One set		
4	Speedy moisture meter complete with chemicals	One set		
5	Straight Edges 3.00 metre width	Two set		
6	Liquid Limit and plastic limit testing apparatus complete with water bottle and glass wares	One set		
7	Electronic/digital balance 5 kg	One no.		
8	Pan balance with weight box, 5 kg.	One no.		
9	Slump cone	Two no.		
10	Concrete cube moulds (150 mm X 150mm)	Twelve no.		
11	Free swelling index test Apparatus	Six no.		
12	Flakiness and elongation testing gauges	Two no.		
13	Water absorption test apparatus	One no.		
14	Specific gravity test apparatus	One no.		
15	B.S. compaction apparatus	One no.		
16	Proving rings	One each		
17	Glass ware	One set		
18	Auto level and staff	Three nos.		
19	Rapid moisture meter	One no.		
20	Post Hole Auger with extensions	One set		
21	Measuring tape, spatula, glassware, porcelain dish, pestle mortar	One set		
22	Standard Proctor Density Test Apparatus with rammer	One set		
23	Electronic/digital balance 1 kg with the least count of 0.01 gm	One set		
24	Camber Board	Two no.		
25	Core Cutter (10 cm dia) 10cm/15cm height complete with dolly and hummer.	One set		

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

26	CBR Testing machine	One no.		
27	Oven (ambient to 200°C)	One no.		
28	Digital Thermometers	Three no.		
	Aggregate Soundness test apparatus	One no.		
30	Concrete cube testing machine	One no.		
31	First aid box	One no.		
32	Sampling Pipette	One no.		
33	Balance	One no.		
34	Dial Gauges	Six No.		
35	Thickness gauge	One set		
36	Water still (4 ft.)	One no.		
37	A.I.V. testing equipment	One no.		

The above list of essential equipment for quality control is for guidance and is not complete. Other apparatus and equipment as desired/required by the Engineer-in-Charge shall be procured by the Contractor

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Format: I-6

List Of Key Equipments/ Machines For Construction Work

Minimum requirement			Available with the Bidder	
S. No.	Name of Equipment/ Machinery	Quantity	Name of Equipment/ Machinery	Quantity
1	Concrete weigh batch mixer	02		
2	Plate Vibrator	02		
3	Pin/Needle vibrator	02		
4	Concrete Lift	01		
5	Welding machine	01		

Tapi Prestressed Products Ltd.

Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Format: I-7

Litigation History

S. No.	Name of other Party(ies)	Cause of dispute	Litigation whether (Court/Arbitration)	Amount Involved	Final Result / Present status of Litigation

Project Manager
JNNURM Water Distribution Project
Municipal Corporation, Bhopal

Annexure – J

Financial Offer (Envelope C)

TENDER FOR A LUMP SUM CONTRACT:

I/We do hereby TENDER to execute the whole of the work described in the drawing and according to the annexed specification for the sum of Rs..... Lacs and should this TENDER be accepted I/We do hereby agree and bind myself/ourselves to a Tender by and fulfill all the conditions annexed to the said specification or in default thereof to forfeit and pay to the MUNICIPAL CORPORATION BHOPAL the penalties of sums of money mentioned in the said conditions viz.

Dated_____ Bidder's Signature_____

Address_____

Witnesses :_____

Address:_____

_____

The above said TENDER is hereby accepted by me on behalf of the MUNICIPAL CORPORATION BHOPAL

The_____2013_____

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* To be expressed in words and figure)

SECURITIES

Name	Address	Occupation or Profession	Remarks

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Tapi Prestressed Products Ltd.

Authorised Signatory

Annexure - K

LETTER OF ACCEPTANCE (LoA)

No. _____ Dated: _____

To,

M/s. _____

(Name and address of the contractor)

Subject: xxxxxxxxxxxxxxxxxxxxxx

(Name of the work as appearing in the Tender for the work)

Dear Sir (s),

Your Tender for the work mentioned above has been accepted on behalf of the Municipal Corporation Bhopal at your Tendered percentage _____ below/ above or at par the Bill of Quantities and item wise rates given therein.

You are requested to submit within 15 (Fifteen) days from the date of issue of this letter:

a. the performance security/ performance guarantee of Rs. _____ (in figures) (Rupees _____ in words only). The performance security shall be in the shape of term deposit receipt/ bank guarantee of any nationalized / schedule commercial bank valid upto three months after the expiry of defects liability period.
b. Insurance policy certificates.
c. Sign the contract agreement.

Please note that the time allowed for carrying out the work as entered in the Tender _____ months shall be reckoned from the date of signing the contract agreement.

Signing the contract agreement shall be reckoned as intimation to commencement of work and no separate letter for commencement of work is required. Therefore, after signing of the agreement, you are directed to contact xxxxxxxxx the Engineer-in-charge for this work for taking the possession of site and necessary instructions to start the work.

Yours

Commissioner
Municipal Corporation Bhopal
District: Bhopal (M.P.

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Annexure - L

Contract Agreement

FORM OF CONTRACT

CONTRACT FOR: xxxxxxxxxxxxxxxxx.
CONTRACT NUMBER: MCX /2013/.....
THIS CONTRACT is made:
BETWEEN: **Municipal Corporation Bhopal** (hereinafter referred to as "the Employer")
AND: **Name and Address of Agency** (hereinafter referred to as "the Agency")
REPRESENTED BY: ***[INSERT OFFICER IN CHARGE – THE "AGENCY'S REPRESENTATIVE" AND COMMUNICATION ADDRESS OF THE AGENCY]***

WHEREAS:

A. **The Employer requires the Agency to execute the works as defined in Section 4 ("the Works") to the ULB under the BRGF Programme; and**

B. **The Agency has agreed to carry out the works on the terms and conditions set out in this Contract and ITA.**

IT IS HEREBY AGREED as follows:

1. **Contract Documents**

This Contract comprises the following documents:

Section 1: Form of Contract and Performance Guarantee Formats
Section 2: Letter of Proposal and Agency's Original Price Schedules
Section 3: General Conditions
Section 4: Special Conditions
Section 5: Specifications
Section 6: Drawings
Section 7: Bills of Quantities

This Contract constitutes the entire agreement between the Parties in respect of the Agency's obligations and supersedes all previous communications between the Parties, other than as expressly provided for in Section 3 and/or Section 4.

Order of Precedence

In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1 (Contract Documents).

Contract Signature

If the Original Form of Contract is not returned to the Contract Officer (as identified in Section 3) duly completed, signed and dated on behalf of the Agency within 15 (fifteen) days of the date of signature of the Form of Contract on behalf of the _____ Municipal Corporation, the Municipal Corporation will be entitled, at its sole discretion, to declare this Contract void.

No payment will be made to the Agency under this Contract until a copy of the Form of Contract, signed on behalf of the Agency, is returned to the Contract Officer.

Commencement and Duration of the Services

The Agency shall mobilize its staff and equipment on site by _____ ("the Due Date") unless this Contract is terminated earlier in accordance with its terms and conditions.

5. **Contract Price and Terms of Payment**

The Employer hereby agrees to pay to the Agency the Contract Price in consideration of the performance by the Agency of its obligations hereunder. The Contract Price shall be Rs 67,32,44,000/- (Rupees Sixty Seven Crore Thirty Two lacs and Forty Four thousand only) inclusive of all applicable government taxes – national and state, as applicable or such other sums as may be determined in accordance with the terms and conditions of the Contract. The terms and procedures of payment according to which the Employer will reimburse the Agency are given in Appendix 2 (Terms and Procedures of Payment) attached hereto.

6. **Time is the Essence**

Time shall be of the essence as regards the fulfillment by the Agency of its obligations under this

Tapi Prestressed Products Ltd.
Authorised Signatory

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Contract.

For and on behalf of Purchaser
Name: Date:
For and on behalf of Agency
Name: Date:
Witness 1
Name:
Date:
Address:
Witness 2
Name:
Date:
Address:

APPENDICES

Appendix 1 - Insurance Requirements
Appendix 2 - Time Schedule
Appendix 3 - List of Major Items of Plant and services and List of Approved Subcontractors
Appendix 4 - Scope of Works and Supply by the Employer
Appendix 5- List of Documents for Approval or Review
Appendix 6 - Functional Guarantees

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Annexure - M

LETTER FOR COMMENCEMENT OF WORK

No. _____ Dated:_____

To,

M/s. _____

(Name and address of the contractor)

Subject: xxxxxxxxxxxxxxxxxxxxxxxxxxxxx.
(Name of the work as appearing in the Tender for the work)

Reference: This office letter of acceptance of your Tender No. _____ date _____

Dear Sir (s),

1. You are requested to contact contact xxxxxxxxxxxxxxxx the Engineer-in-charge for this work for taking the possession of site at starting the work at once)
2. Please note that the time allowed for carrying out the work as entered in the Tender _____ months shall be reckoned from the date of signing the contract agreement.

Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Yours

Commissioner
Municipal Corporation Bhopal
District:Bhopal (M.P.)
Tapi Prestressed Products Ltd.

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Annexure – N

PRE-QUALIFICATIONS CRITERIA

The Bidder should have:

1. Firms and contractors participating in the tender shall have to furnish following documents for obtaining the tender documents,

a) Valid Registration certificate in the appropriate category of GoMP or equivalent in any State/Central Government Department or Government undertaking.

b) Certificate for executing work of water supply scheme in last 7 years, comprising of Intake well, Raw/Clear water pumping main, Water Treatment Plant, pumps, OHTs, Distribution system completed and running successfully at present.

i) Three similar completed works costing not less than the amount equal to 40 % of estimated cost.

or

ii) Two similar completed works costing not less than the amount equal to 50 % of estimated cost.

or

iii) One similar completed work costing not less than the amount equal to 80 % of estimated cost.

This certificate should clearly mention amount of Contract, Completion period as per Tender and actual completion period. (In case of WPI adjustment for cost of works the same may be furnished along with a certificate of Chartered Accountant). The certificate shall be issued from the officer not below the rank of Executive Engineer or equivalent.

g) Certified copy of audited balance sheet of last 3 years, showing the average annual turnover equal to or more than 30% of the estimated cost of the work.

h) Commercial tax registration certificate.

2. Joint ventures firms can also participate for which details can be seen in Tender Document.
3. The validity of offer shall be 180 days.

Note: Above criteria are indicative, subject to suitable stipulations by the departments and specific Tender

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Annexure – O

SPECIAL ELIGIBILITY CRITERIA

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Municipal Corporation, Bhopal

Annexure- P

Technical Staff Requirement

The contractor shall employ the following technical staff during the execution of work:-

1.0 Staff for operation of various Unit

S.No.	Particulars/Staff	Chowkidar	Operator	Valveman	Chemist	Electrician
1.0	Intakewell	2	3			
2.0	Rising/Feeder Mains			1 each for 5 kms		
3.0	Water Treatment plant	2	3		1	1
4.0	OHTs	1 at each OHT	1 at each OHT			
5.0	Distribution			1 each for 10 kms		

2.0 Maintenance Team required for repairs and maintenance of Pipeline,

1 each for Distribution and For Rising /Feeder Main

Non-Skilled Labour 4 nos.
Skilled Labour 2 nos.
Supervisor 1 nos.

3.0 Mechanical Engineer

For plants having capacity more than 5 MLD upto 25 MLD. Thereafter 1 each for 10 MLD capacity enhancement.

4.0 Project Manager

For schemes upto 5 MLD capacity 1 nos. Project Manager
For Schemes having capacity 5 MLD upto 25 MLD 1 no. Project Manager and 1 no. Dy. Project Manager Thereafter 1 each for 10 MLD capacity enhancement.

5.0 Salary Structure : Minimum Salary fpr the various staff personnel shall as per below,

S.No.	Particulars	Monthly Remuneration (In Rs)
1	Chowkidar/Unskilled Labour	7200
2	Skilled Labour/Operator	8500
3	Electrician (ITI) /Valve man (ITI)	10000
4	Supervisor (Diploma) /Chemist (B.Sc. in Chemistry)	12000
5	Mechanical Engineer (Diploma with 3 years Experience)	18000
6	Dy. Project Manager (Degree with 2 years Experience)	25000
7	Project Manager (Degree with 5 years Experience)	35000

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Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

Kolar Water Supply Scheme, Municipal Corporation, Bhopal

Draft Service Level Obligation & Understanding (OU)

FOR
WATER SUPPLY OPERATION AND MAINTENANCE
UNDER
CONTRACT AGREEMENT No. .....
DT.....

WITH

Tapi Prestressed Products Ltd.

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Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

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Project Manager
JNNURM (Water Distribution Project)
Municipal Corporation, Bhopal

This Obligation Understanding (OU) made on this ____ day of _____, 20....at Bhopal, Madhya Pradesh.

BETWEEN

Municipal Coroporation, constituted under the Madhya Pradesh Municipalities Act 1961, (hereinafter referred to as ("BMC") which expression shall, unless the context otherwise requires, include its administrators and assigns);

And

_____ a Company incorporated under the Companies Act, 1956 and having its registered office at _____, (hereinafter "**Operator**" which expression shall, unless the context otherwise requires, include its successors and permitted assigns)

Whereas:

A BMC as Part of its initiative to implement a new project and maintain a Service Level Benchmark (SLB) in water supply as set by MoUD, Government of India, to its consumers has taken up a project for a command area under its jurisdiction. The project aims to achieve a high level of Technical & Commercial efficiency & upgrading/implementing-new water supply for continuous pressurized water supply & improving revenue & demand management to optimize water consumption as per the CPHEEO norms.. **The principal features of the project shall be as follows**

i. Project: There is no existing treated water supply system based on the surface water source. It is envisaged that the water requirement in the project area shall be 20 MLD at the time of commissioning.

ii. The project objectives based on "Service Level Benchmarks" for water supply services include:

- a) 100% piped water supply coverage by year 2016.
- b) Per capita water supply to 135 lpcd through the implementation of effective demand management.
- c) Continuity of water supply to 24x7 by the year 2016 and subsequent years beyond 2016.
- d) Extent of metering of water connections to be 100% by the year 2016.
- e) Extent of non revenue water to be 20%.
- f) Quality of water as per the CPHEEO standards.
- g) Operating cost recovery to be 100% by 2016 by way of acceptable water tariff and efficient revenue collection system;
- h) Efficiency in redressal of consumer complaints to be 80% in any 24hrs period by 2016.
- i) Efficiency in collection of water related charges to reach 80% or more in the next five years after project commissioning.

iii. **Communication:** An effective communication system should be established with consumers, RWA's Public representatives, employees. etc, before and after the appointment of the operator.

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Municipal Corporation, Bhopal

iv. The expected outcomes of this Obligation Understanding are:

a) Better customer service
b) Optimal energy consumption and low cost thereon;
c) Optimal O&M cost.
d) Reliability of quality water supply on a continuous basis;.
e) Better financial sustainability.

v. **Tariff:** It is expected that by levying the socially acceptable user charge/water tariff will generate sufficient revenue to meet all the O&M expenses.

vi. **Revenue:** The revenue from water charges shall be deposited in a specially created account of the BMC which will be opened for the project.

vii. **Operator's Remunerations:** Operator's fee shall be paid on a lump-sum basis per annum [payable equally per quarter] and will ensure the technical efficiency of the project. Payment is directly related to the technical efficiency attained by the operator post commissioning.

viii. The Water account which will be opened for the project shall be escrowed to the operator in order to guarantee timely payment as per the contract.

ix. **Monitoring of performance:** Monitoring Committee having an advisory role shall consist of the Representative of Parishad or Resident Welfare Associations (RWA's), Public representatives, Municipality officials to monitor the customer services etc.

x. **Sovereign Power:** such as disconnection, ownership of assets, development of new Infrastructures shall remain with BMC.

xi. **Dealing with defaulter consumers: defaulters:** BMC will identify defaulting consumer and BMC may instruct operator for disconnection.

xii. **Project implementation Stages.**

Phase – II – Implementation Period including mobilization, design & drawing : **18 months;**

Phase – II – O&M period : **120 months.**

B *BMC* has full authority to enter into this Obligation Understanding with the Operator and to confer absolute Right to do Operation & Maintenance [post commissioning] of the Project in accordance with terms and conditions set forth hereunder.

C The Parties have agreed to enter into this OU on the terms and conditions set out herein.

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Project Manager
JNNURM (Water Supply Project)
Municipal Corporation, Bhopal

1. GRANT OF RIGHTS TO THE OPERATOR

1.1 Grant of Rights

Subject to and in accordance with the terms and conditions set forth in this document (OU) , *BMC* hereby authorizes the Operator:

1.1.1 To investigate, study, design, engineer, procure, construct, augment, operate and maintain the Project Infrastructures and to exercise and / or enjoy the rights, powers, benefits, privileges, authorizations and entitlements as set forth in this OU to provide piped water supply in the project area under the jurisdiction of BMC.

1.1.2 To enter upon and use the Service Area during the OUPeriod of [18 Months (Design and construction period) +120 Months (O&M Period)] including all rights of way and easements relating to the Project and access to the Project Infrastructures , including the Existing Assets, so that the Operator, its agents, sub-contractors and any third party it might designate may perform its rights and obligations under this OU, including the right to conduct any kind of work in the streets and other public places of the Service Area, in order to have access to the Project Infrastructures .

1.1.3 To produce drinking water as per the CPHEEO standard and supply to the Service Area as, immediately from the date of commissioning of project, without interruption in accordance with the provisions of this document (OU). The expected quantum of treated water supply contemplated by *BMC* in the year 2015 through 2045 shall be as given below.

Year									
Minimum Water Supply by Operator [MLD]									

1.1.4 To prepare and issue water bills to consumers on behalf of *BMC* till Expiry or Termination Date as the case may be. To fulfill its obligations, the Operator shall have the right to undertake activities either by itself or through subcontracting arrangements.

1.1.5 To exercise such other rights as *BMC* may determine as being necessary or desirable and which it consents to in writing, for the purposes incidental and necessary for the provision of the services having regard to the needs of the consumers.

1.2 OU Period

The time period of this OU shall be for 120 Months excluding 18 months of project implementation period. Provided that in the event of Termination, the OU Period shall mean and be limited to the period commencing from the date of commissioning of project and ending with the Termination Date.

1.3 Acceptance of rights by the Operator

In consideration of the rights, privileges and benefits conferred upon the Operator, and other good and valuable consideration expressed herein, the Operator hereby accepts the rights granted under this OUand agrees and undertakes to perform / discharge all of its obligations

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Project)

Bhopal

in accordance with the provisions hereof.

2. CONDITIONS PRECEDENT

The rights and obligations of the Operator shall be subject to the satisfaction in full of the following conditions precedent to be fulfilled unless any such condition has been waived. Each Party shall bear its respective cost and expense of satisfying such Condition Precedent.

2.1 Operator's Conditions Precedent

The Performance Security in full has been provided by the Operator to *BMC* in accordance with tender conditions:

2.2 BMC's Conditions Precedent

a. *BMC* shall have granted to the Operator or caused to be granted to the Operator all the necessary rights including pipeline routes, and other Easementary Rights in order to permit design, construction, rehabilitation, testing, commissioning and operation and maintenance of the Project Infrastructures ;
b. *BMC* shall have received authorizations required for the execution and implementation of the Project and of its rights.
c. Opening of special purpose account & approval for escrow arrangement on such account

2.3 Non-Fulfillment of Conditions Precedent

a. If the Conditions Precedent set forth above have not been satisfied on or before the expiry of 01 (one) months from the Appointed Date and the Other Party has not extended the said period or waived, fully or partially, such conditions, than the Operator or *BMC* may, give twenty-one (21) days notice in writing to the Party which has failed to fulfill the Condition Precedent and upon expiry of such notice this OU shall stand terminated.
b. Upon Termination on account of non-fulfillment of Conditions Precedent by *BMC*, the *BMC* shall release the Performance Security to the Operator.
c. Upon Termination on account of non-fulfillment of Conditions Precedent by Operator, the *BMC* shall appropriate the Performance Security.

3. MONITORING COMMITTEE

BMC shall constitute the Monitoring Committee having advisory role to *BMC* within 90 days of project commissioning which shall consist of the following:

a. consist of following representatives
   i. Class-I Officer / Nominated representative of *BMC*
   ii. Nominated Officer from Directorate of Urban Administration and Development Department, GoMP.
   iii. Member of council nominated by Perishad.

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Municipal Corporation, Bhopal

iv. Two members from *BMC* (One officer each from Revenue/Finance side and one officers from technical side-Engineer).

v. One member from Residents Welfare Associations (RWA)

b. be responsible for monitoring of the Project implementation and Performance by the Operator.

c. all the recommendations of the Monitoring Committee shall be within the contract structure.

d. the Monitoring Committee may decide the frequency of meeting to be held but the MC meeting should be held at least once in three months. During the project implementation period the MC meeting shall be held monthly.

e. the Corum of meeting shall be of a minimum of 5 members. In the absence of a corum the meeting shall be rescheduled.

f. BMC Council may replace any member in case a member is not in position to attend the meeting for whatsoever reason or abstain for more than 2 meeting in continuation.

g. the expenditure of the MC meeting shall be borne by BMC

h. the operator's representative will be a permanent invitee for MC meeting to represent operator in the meeting, as & when the MC requires such representation

4. OBLIGATIONS OF OPERATOR

Operator shall have the following obligations:

4.1 Performance Security

The Operator shall, for due and punctual performance of its obligations hereunder relating to the Project, submitted to *BMC*, simultaneously with the execution of this OU, provide a revolving bank guarantee from a scheduled bank acceptable to *BMC*, in favour of _____, *BMC*, in the form as set out in Tender Document, ("Performance Security") for a sum of Rs. 5% of the O&M Cost [*this shall be 5% of the bid O&M cost which shall be 25%]*(Rupees .....). The bank guarantee for Performance Security shall be kept valid throughout the OU Period. Provided that if the OUis terminated due to any event other than an Operator Event of Default, the Performance Security if subsisting as of the Termination Date shall, subject to *BMC*'s right to receive amounts, if any, due from the Operator, be duly discharged and released to the Operator.

4.2 Working Capital Arrangement

The Operator shall at its own cost; expenses and risk shall arrange working capital during the O&M period excluding any capital investment to meet its service level obligation.

4.3 O&M Obligation

4.3.1 The Operator shall during the O&M Period (Post commissioning period), undertake all services relating to operation and maintenance of the Project Infrastructures in conformity

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Municipal Corporation, Bhopal

with O&M requirements.

4.3.2 The Operator shall along with the Approved Implementation Plan, submit to the BMC a plan for operation and maintenance of the Project Infrastructures ("O&M Plan") in conformity with the O&M Requirements and Performance Standards as per the CPHEEO standard.

4.3.3 The O&M Plan shall set out in detail the standards, schedules, procedures, type, periodicity and other details of the operation and maintenance activities to be carried out for the Project during the OU Period so as to meet the O&M Requirements as well as details of the management information system to be incorporated, reports to be submitted and procedure for reviews, including developing a mechanism for grievance redressal.

4.3.4 Within 30 days of receipt of the O&M Plan, the BMC shall review the same and convey its comments/observations to the Operator on the O&M Plan, including the need, if any, to modify the same. If the comments/observations of the BMC require the O&M Plan to be modified, the Operator shall suitably modify the O&M Plan. The O&M Plan shall be finalized with mutual consent.

4.3.5 Notwithstanding any review or failure to review by the Operator or the comments/ observations of the BMC, the Operator shall be solely responsible for the adequacy of the O&M Plan and the conformity thereof with the Performance Standards, Construction Requirements and O&M Requirements and shall not be relieved or absolved in any manner whatsoever of any of its obligations hereunder.

4.3.6 The Operator shall within a reasonable period inform *BMC of the* details of its key personnel responsible for O&M and subsequent changes, if any, from time to time.

4.3.7 The Operator shall undertake operations and maintenance of the Project Infrastructures by itself or through contractor possessing requisite Technical/financial/managerial expertise/ capability, but in either case, the Operator shall remain solely responsible to meet the O&M requirements.

4.3.8 The Operator shall incorporate good management practices and appropriate technologies required for meeting the Performance Standards.

4.3.9 The Operator shall, during the OU Period;

a. have requisite organization and designate and appoint suitable staff / representatives as it may deem appropriate to supervise the Project, to deal with the BMC and *BMC* and to be responsible for all necessary exchange of information required pursuant to this OU;

b. for the purposes of determining that the Project Infrastructures are being maintained in accordance with the O&M Requirements, the Operator shall with due diligence carry out all necessary and periodical Tests in accordance with the instructions and under the supervision of the BMC. The Operator shall maintain proper record of such Tests and the remedial measures taken to cure the defects or deficiencies, if any, indicated by the Test results.

c. conduct all Tests to ascertain compliance with O&M Requirements.

d. suspend forthwith the whole or any part of the O&M activities upon receiving a written notice from the BMC, who may require the Operator to suspend the activities in whole or part if in the reasonable opinion of the BMC, the operations are being carried on in a manner that is not in conformity with the O&M Requirements.

4.3.10 The Operator shall as per pre agreed format record the system performance and periodically

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Municipal Corporation, Bhopal

provide the same to BMC / *BMC*.

In the event the Operator has failed to operate and maintain the Project in accordance with the O&M Requirements, and such failure has not been remedied despite a notice to that effect issued by the BMC("**Notice to Remedy**"), *BMC* may, without prejudice to any of its other rights /remedies, be entitled to operate and maintain the Project or cause to repair and maintain the Project Infrastructures at the risk and cost of the Operator. The Operator shall reimburse all 200% (two hundred percent) of the costs incurred by *BMC* on account of such operation and maintenance or repair and maintenance within 7 days of receipt of *BMC* claim thereof.

4.3.11 The Operator shall be deemed to be in material breach of O&M Requirements if the BMC acting reasonably and in accordance with the provisions hereof, has determined that the there has been a breach of the Operator's obligations as follows:

a. there has been failure / undue delay in carrying out scheduled / planned maintenance or the scheduled / planned maintenance has not been carried out in accordance with the O&M Requirements;

b. the maintenance of the Project Infrastructures or any part thereof has deteriorated to a level which is below the acceptance level prescribed by the O&M Requirements;

c. there has been a serious or persistent let up in adhering to the O&M Requirements and thereby the Project Infrastructures or any part thereof is not safe for operations;

d. there has been persistent breach of O&M Requirements. For avoidance of doubt, persistent breach shall mean:

   i. any breach of O&M Requirements by the Operator which has not been remedied by the Operator despite a Notice to Remedy in respect thereof issued by the BMC ;

   ii. recurrence of a breach by the Operator, during the pendency of Notice to Remedy by the BMC requiring the Operator to remedy a breach, and repeated occurrence of a breach notwithstanding that earlier breach has been remedied pursuant to Notice to Remedy or otherwise. Upon occurrence of a material breach of O&M Requirements, BMC shall, without prejudice to and notwithstanding any other consequences provided therefore under this OU, be entitled to terminate this OU.

4.4 Service Obligation

a. supply Treated water to consumers within the Service Area and shall meet its Performance Standards as per the CPHEEO requirement.

b. at its cost and expense, undertake emergency chlorination measures at times of outbreak of epidemics and any such emergency situations.

c. identify Critical Measurement Points in the distribution network, in consultation with BMC for installation of pressure measurement data loggers.

   i. ensure that the Treated Water shall be supplied at a positive pressure being never less than 07 (seven) meters measured at all the Critical Measurement Points in the Service Area at all times.

   ii. continuously log pressure readings at all pressure-metering points installed at Critical

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Project Manager
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Municipal Corporation, Bhopal

Measurement Points, which shall also include a point where pressure is routinely experienced at the minimum level in the Service Area, and monitor continuous pressured water supply on a daily basis in accordance with the prudent utilities practice.

d. Carryout repairs to any leakages in the distribution network.

e. from the project commissioning date, carry out the following activities in the Service Area:

i. upon intimation by *BMC*, provide connection to a property within a period of seven (7) days from such intimation;

ii. carry on basic plumbing and shall replace, with the approval of the *BMC*, illegal property water connections with legal connections where the property owner accepts to legitimize the connection, and if the property owner does not so opt to legitimize the connection the operator shall act per the written instruction of BMC and shall carryout disconnection in presence of BMC official;

iii. be expected to co-operate with *BMC* in the implementation of the communications program to foster ownership of the Project by the local stakeholders and encourage their support for the work. The Operator shall disseminate to the Consumers the communication materials prepared by the *BMC* through their inclusion with water bills and their availability at

iv. set up and operate the Consumer Service Centers established in the Service Area. The communication material shall include information on significance of safe quality water supplied including water conservation and benefits of continuous water supply to the Consumers. The Operator shall do nothing that would hinder the work of those involved in implementing the communications program.

v. Report, if possible and deemed necessary to *BMC* in respect of unauthorized water connections and connections for which the Consumers have defaulted on the payment in the Service Area. Within 30 days of such intimation *BMC* shall with the assistance of Operator, undertake remedial actions by way of either regularizing the unauthorized connections or disconnecting such properties from the network within the Service Area and initiate proceedings as necessary for collecting the dues from such connections.

vi. Set up water quality surveillance program to undertake daily, weekly and monthly testing of water quality at Consumer taps for checking the residual chlorine content and also chemical and bacteriological quality of the supplied water, only in case the consumer is not storing water or consuming water directly.

4.5 General Obligations

The Operator shall at its own cost and expense observe, undertake, comply with and perform, in addition to and not in derogation of its obligations setout as following:

a. investigate, study, design, procure, construct, augment, construct, operate and maintain the project infrastructure in accordance with the provisions hereof;

b. review the existing consumer database, appropriately modify to reflect the details of consumers and periodically update the same; [*in case this data base does not exists then this work shall be done by the Operator]*

c. develop and maintain in a good order and up to date the inventories, maps and any other

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Municipal Corporation, Bhopal

technical documents that are needed to operate all the project infrastructure;

d. allow representatives of *BMC* or persons duly authorized by the relevant Government Agency concerned with safety, security or environmental protection, access to the Project Infrastructures , at all reasonable times and on reasonable notice, but so as not to interfere unreasonably with the construction, operation or maintenance of the Project Infrastructures ;

i. procure, as required, the appropriate proprietary rights, licenses, agreements and permissions for materials, methods, processes and systems used or incorporated into the Project;

j. make efforts to maintain harmony and good industrial relations among the personnel employed in connection with the performance of its obligations under this OU and shall be solely responsible for compliance with all labour laws and solely liable for all possible claims and employment related liabilities of its staff employed in relation with the Project and hereby indemnifies *BMC* against any claims, damages, expenses or losses in this regard and that in no case and shall for no purpose shall *BMC* be treated as employer in this regard;

k. not to place or create nor permit other person claiming through or under the Operator to create or place any Encumbrance or security interest over all or any part of Service Area or the Project Infrastructures , or on any rights of the Operator therein or under this OU, save and except as expressly set forth in this OU; be responsible for all the health, security, environment and safety aspects of the Project at all times during the OU Period

l. ensure that the Project Infrastructures remain free from all encroachments and take all steps necessary to remove encroachments, if any;

m. upon receipt of a request thereof, afford access to the Project Infrastructures to the authorized representatives of *BMC* for the purpose of ascertaining compliance with the obligations.

n. indemnify *BMC* against all actions, suits, claims, demands and claims and any loss or damage or cost or expense that may be suffered by them on account of anything done or omitted to be done by the Operator in connection with the performance of its obligations under this OU; and

o. assist and co-operate with the Monitoring Committee in discharging their obligations under this OUand implement the directions and consider the recommendation given by the Monitoring Committee from time to time.

4.6 Customer Service

a. set up a Consumer Service Centre in the Service Area, at an appropriate location designated by *BMC*, which would have a minimum of three (3) operational dedicated phone lines and a minimum of two consumer service representatives during 8am – 8pm on any working day and one consumer service representative during the remaining hours of the day for receiving Consumer calls/complaints in various forms such as telephone calls, e-mail, short message service etc. and undertake prudent consumer grievance redressal mechanisms, which shall be duly documented.

b. continuously log the consumer complaints received through personal visits, letters, telephone calls, emails, sms etc of consumers and respond to consumer within 24 hours from the time of receipt of such complaint and resolve the complaint within 5 (five) working days from the time of receipt of the said complaint. Any complaints related to lack of water or water or poor quality of water shall be attended to within 6 (six) hours from the time of receipt of complaint and resolved within 24 hours.

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4.7 Billing

4.7.1 Billing Mechanism

a. The Operator shall develop and set up a computerized billing system compatible with *BMC* billing system with all built in monitoring systems. The Operator shall provide *BMC* the access to the computerized billing [GSM Based Billing] system.

b. For the purpose of billing the Consumers against the supply of Treated Water, the Operator shall carry out the following activities:

   i. from the commissioning date, the Operator shall continue to issue water bills prepared by BMC or on the behalf of BMC .

   ii. record the water meter readings of the Consumers at the end of every 2 months/Billing Cycle from the date of installation of the meters and assess the water charges at the prevailing water bills and advise the Consumer and *BMC* on the amounts so as to provide maximum two billing cycle to the Consumer to undertake any repairs in internal plumbing of the Consumer Property to minimize wastage of water supplied.

   iii. distribute Water Bills monthly/ or as decided by *BMC* to consumers based on the volume of Treated Water consumed at the Water Charge set by *BMC*.

   iv. the bills printed by the Operator on the GSM based system should indicate that the Consumer Payment has been collected by *BMC* and if payment is not made by the due date BMCP shall intimate to the operator who shall do the necessary correction in the prospective/future water bill/charge.

4.8 Providing Connection

4.8.1 Obligation to make connections to a water main

On receipt of connection advice from KMPP the operator shall prepare the estimate as per approved rates of *BMC* for providing water connection in which the cost of plumbing upto water meter shall be included. Apart from the inclusion of applicable costs and charges in accordance with *BMC*'s water supply bye laws, the cost shall also include the cost of road cutting if any and restoration to original or better condition thereof. The estimate for the above cost/s shall be issued by the *BMC* to the intending consumer. On payment to *BMC* by the intending consumer, the cost of new connections as per the demand note/estimate BMC shall issue connection advice to the operator, and Operator shall provide such connection within seven (7) days upon completion of all connection work and affixation of a calibrated metering device. The *BMC* shall reimburse to the operator the cost of providing water connection. The operator shall be fully responsible for the restoration of road cutting to the original or better condition thereof.

4.9 Disconnections

The operator shall carryout the disconnection of services only after the written instruction of BMC within the stipulated time of seven (7) days.

4.10 Insurance

4.10.1 The Operator shall throughout the OU Period at its cost and expense, purchase and maintain

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Project Manager
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Municipal Corporation, Bhopal

by due re-instatement or otherwise all insurances limited to its obligations in respect of the project infrastructure in accordance with the prudent industry practice. The Operator shall maintain a register of entry in order of premiums paid and proof of payments made shall be submitted to *BMC* whenever requested for. during the subsistence of OU Period the insurance shall follow the following guiding principles:

i. loss, damage or destruction of the Project Infrastructures excluding for the Existing Assets at replacement value;

ii. comprehensive third party liability insurance including injury or death to personnel / representatives of Persons who may enter the Service Area;

iii. workmen's compensation insurance;

iv. standard fire and special perils

v. the Operator's general liability arising out of the rights granted by the BMC under this OU;

vi. liability to third parties;

vii. Third Party Motor Vehicle Liability Insurance Covering use of all vehicles used by the Operator or its Sub- Contractors, whether or not owned by them, in connection with its obligation under this OU; and

viii. any other insurance that may be necessary to protect the Operator, its employees and its assets against loss, damage, destruction, including insurance against all Force Majeure Events that are insurable.

4.10.2 If at any time the Operator fails to obtain or maintain in full force and effect any and all of the insurances required under this OU, *BMC* may at its option (but not being obliged to do so) obtain and maintain such insurance and all sums incurred by *BMC* thereof shall be reimbursed by the Operator to *BMC* together with interest thereon at 2% over SBI PLR from the date the respective sums were incurred by *BMC*, within 7 days from the receipt of claim in respect thereof made by *BMC*.

4.10.3 Waiver of subrogation

All insurance policies in respect of the insurance obtained by the Operator pursuant to this Section shall include a waiver of any and all rights of subrogation or recovery of the insurers thereunder against, inter alia, *BMC*, and its assigns, successors, undertakings and their subsidiaries, affiliates, employees, insurers and underwriters, and of any right of the insurers to any set-off or counterclaim or any other deduction, whether by attachment or otherwise, in respect of any liability of any such person insured under any such policy or in any way connected with any loss, liability or obligation covered by such policies of insurance.

4.10.4 Un-insurable Risks

If during the OU Period, any risk which has been previously insured becomes un- insurable due to the fact that the insurers have ceased to insure such a risk and therefore insurance cannot be maintained / re-instated in respect of such risk, the Operator shall notbe deemed to be in breach of its obligations regarding insurance under this OU.

4.11 Environmental Compliance

The Operator shall, at all times, ensure that all aspects of the Project Infrastructures and processes

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employed in the construction, operation and maintenance thereof shall conform with the laws pertaining to environment, health and safety aspects, policies and guidelines related thereto. The Operator shall obtain and maintain from time to time all necessary clearances as per the environment management plans in respect of the Project Infrastructures. While, *BMC* shall provide necessary assistance to the Operator in securing the said clearances, the Operator shall be responsible for obtaining and maintaining the said clearances.

4.12 No Breach of Obligations

The Operator shall not be considered to be in breach of its obligations under this OU nor shall it incur or suffer any liability if and to the extent performance of any of its obligations under this OUis affected by or on account of any of the following:

a. *BMC* Event of Default;

b. Compliance with the instructions of *BMC* or the directions of any Government Agency/ Court Order/Statuary Body which may create deviation of obligation by Operator detailed in this OU;

4.13 Maintenance of Records

a) The Operator shall maintain records in accordance and provide monthly, quarterly and annual reports of the same to the *BMC*. This report should also include details on stocks and assets held by the Operator during the OUPeriod.

b) Maintain daily records of the following and submit the same to *BMC* and the BMC by the 10th day of every Month or in case the 10th day of a Month is a holiday then on the following working day of such Month:

i. Quantum of Treated Water as measured at the outlet..

ii. Results of the residual chlorine measurement in the network and the periodical measurement for chemical and bacteriological analysis of the water supplied to the Consumers

iii. Quantum of Treated Water supplied to the Consumers based on the Water Supply and Consumption Statement

iv. Estimation of the Leakage Losses and

v. Pressure at the Critical Measurement Points

vi. Redressal of Consumer complaints and public disclosure.

vii. provide to the BMC, a report on the project operational data, including technical and cost data. Data shall include description of service levels, state of Project Infrastructures , physical improvements carried and consequent investments made, operational issues including Consumer service, monthly billing, and management of maintenance records, connections and disconnections.

viii. continuously log pressure readings at pressure-metering points installed at Critical Measurement Points on the distribution network as approved by the *BMC* including a point where pressure is routinely experienced at the minimum level in Service Area and to measure and monitor continuous pressured water supply on a daily basis in accordance with the good industry practice.

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ix. rechlorinate the Treated Water so as to ensure that the residual chlorine content at the Consumer tap complies with the O&M Requirement

x. take necessary action as may be appropriate and in accordance with good industry practice in the event of an emergency or risk of danger or damage to persons or property (including the Project Infrastructures).

4.14 APPLICABLE PERMITS

The Operator shall, at its own cost and expense, in addition to and not in derogation of its obligations elsewhere set out in this OU shall;

a. make, or cause to be made, necessary applications to the relevant Government instrumentalities with such particulars and details, as may be required for obtaining all Applicable Permits and obtain and keep in force and effect such Applicable Permits in conformity with the Applicable Laws;

b. ensure and procure that its Sub-Contractors comply with all Applicable Permits and Applicable Laws in the performance by them of any of the Operator's obligations under this OU;

5. Obligation of BMC

During the Operation and Management Period, BMC shall have the following obligations, as applicable:

(a) provide the Operator with assistance as is necessary in procuring access to:
  (i) the water supply infrastructure within the service area; and
  (ii) Provide space for storage Facility;
  (iii) Grant right to create/construct facility for the OU period at the location(s) for specific use to meet the operational requirements;

(b) provide the OC with the permission to repair or replace the Infrastructures , which the OC is responsible for as the case may be;

(c) order decommissioning of existing asset as the case may be and receive the salvaged material;

(d) depute the Corporations Employees and constitute the Monitoring Committee

(e) Make regular payment to Operator;

(f) Manage all aspects of customer interface outside the service scope of Operator;

(g) Receive requests for approvals for new connections and issue written order to Operator

(h) Appoint appropriate agency for the purpose of service delivery monitoring by Operator;

(i) Assist Operator in case of Law and Order problem and provide police protection while disconnection;

(j) Assist Operator for meeting service level obligations as the case may;

(k) Ensuring Raw water availability (Quality & Quantity) and announcing the water scarcity/deficit period as the case may be;

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(l) take legal action on those people/entity who damage the water infrastructure and against whom Operator intend to take legal action after due consideration;

6. Water Shortage Period

a) A Water Shortage Period shall commence when *BMC* has failed to ensure raw water availability of designated quantity of Raw Water to the Operator because of any of the following reasons not attributable to the negligence of Operator :

b) *BMC* notifying the commencement of a Water Shortage Period or

c) The determination by Operator of shortage of water and certification thereof by the *BMC*, *BMC* shall notify the commencement of a Water Shortage Period to the Consumers through suitable means, which shall be deemed to have commenced from the first hour of such notification.

d) The Water Shortage Period shall cease when the *BMC* notifies and supplies the designated quantity of raw water or treated water from other source at the input point.
Provided that during a Water Shortage Period or otherwise, *BMC* shall have rights to direct the Operator to modify the water supply and regulate the allocation of potable water among the Consumers.

e) During the subsistence of a Water Shortage Period, Operator shall undertake such measures so as to minimize the supply interruptions to the Consumers. . Subject to the Operator making reasonable endeavors to maintain the Services, the Operator shall not be considered to be in any Material Breach under this OU and shall not be subjected to penalty arising out of water shortage.

7. O&M Cost Obligation

The gross operator rate includes the following O&M Cost obligations with other contractual obligation within the project area:

(i) establishment cost
(ii) chemical cost & other consumables
(iii) Minor maintenance & repairs of Project Infrastructures
(iv) O&M obligations under this contract unless excluded by this contract.

8. Operator Payment & Mechanism

Subject to the provisions of this OU and in consideration of the Operator accepting the rights under this OUand undertaking to perform and discharge its obligations in accordance with the terms & conditions set-forth in this OU, *BMC* shall pay to the Operator a lump sum fee bill/invoice raised by operator after making necessary adjustments.

8.1 Escrow Mechanism

BMC shall establish and maintain an Escrow Account with the Escrow Agent, which shall be settled in trust with the Escrow Agent and shall be operated in accordance with the provisions of escrow agreement.

8.2 Payment Guarantee Mechanism

The payment guarantee mechanism is set out below.

a. *BMC* shall within 15 (fifteen) days of project commissioning date enter into Escrow

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Agreement with Operator and a bank to be agreed between the Parties for opening and establishing a Escrow Account, to meet the Operator Payment ("EscrowAgreement").

b. The nature and scope of the Escrow Account, deposits of amount, withdrawals and retention related conditions shall be fully described in the Escrow Agreement.

c. The amounts deposited in the Escrow Account shall be utilized towards meeting the Operator Payment payable by *BMC* to the Operator and in such manner as provided in the Escrow Account. The amounts in the Escrow Account at the start of a quarter shall be equal to three months of the Operator Payments and shall be replenished on a regular basis in accordance with the Escrow Agreement.

d. The Parties undertake that the amounts deposited in the Escrow Account shall be utilized only for purposes and the manner as specified in Escrow Agreement.

8.3 Mechanism of Operator Payment

The operator shall be paid through the Escrow Account on quarterly basis. The O&M cost submitted by the operator at the time shall be divided for the period of contract on quarterly basis. The payment shall be computed by BMC in consultation with the agency appointed by BMC. The net operator payment shall be computed under the following formula which shall be paid by BMC:

Net Operator Payment= (Agreed payment to the operator at the time of tendering +Incentive(s)) – (Penalty + Direct Payment + Liquidated damage (Material Breach)

8.4 Incentive

In case of achieving the desired service level, resulting in BMC collection of more than 85% of water tax; the operator may seek an incentive of 10% of the revenue collected in excess of 85% of water tax. The Monitoring Committee envisaged under clause 3 will vet any such demand of operator and make necessary recommendations to BMC which, in accordance to the recommendation of Monitoring Committee, will release incentives to the operator.

8.5 Penalty

In case of non achievement of following service indicators as detailed hereunder Operator shall be liable for penalty which shall be calculated as follows:

Penalty Structure

S.N.	Parameter	Acceptable Infraction	Penalty (Rupees)	Modality	Calculation Methodology
	(A)	(B)	(D)	(E)	(F)
1.	Residual Chlorine not as per the CPHEEO norm	10 Location/ Complains	Five Thousands rupees per infraction beyond (B).	BMC or its agency conducted tests in the recognized laboratory – laboratory test certificate.	If the infraction is more than ten then the penalty shall be calculated Rupees twenty five thousands + (number of infraction beyond 10) multiplied by Rupees five thousands.

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S.N.	Parameter	Acceptable Infraction	Penalty (Rupees)	Modality	Calculation Methodology
	(A)	(B)	(D)	(E)	(F)
2.	Water Quality not as CPHEEO standard	10 locations	Five Thousands rupees per infraction beyond (B).	BMC or its agency conducted tests in the recognized laboratory – laboratory test certificate.	If the infraction is more than ten then the penalty shall be= Rupees twenty five thousands + (number of infraction beyond 10) multiplied by Rupees five thousands.
3.	Pressure lower than 07 (seven) meter at ferrule point	3 critical points	Ten Thousands Rupees per infraction beyond (B)	1. BMC or its agency analyzed the data-logger data. and/or 2. Frequent customer complain by same customer and decided in MC.	If the infraction is more than three then the penalty shall be = Rupees fifteen thousand + (number of infraction beyond 3) multiplied Rupees ten thousands.
4.	Non Receipt of Water Charge Bill or error in water bill	50 non Receipt	One thousands per infraction	1. Two arrear and customer complain; 2. Enquiry by BMC officials or its agency;	If the infraction is more than fifty then the penalty shall be = Rupees two thousand fife hundred + (number of infraction beyond fifty) multiplied Rupees ten thousands.
5.	Delay in Connection	No Tolerance	One thousands per day	1. Customer signature on the completion certificate. And/or 2. Updated customer database	Number of days delayed multiplied by one thousands rupees per infraction
6.	Delay in disconnection	No Tolerance	Two Thousands per day	1. Notice issued by NKPP and data of completion certificate submitted by operator with photograph. And/or 2. Physically verified by NKPP or its agency on the due date of disconnection with photograph having digital time (by the end of office hours)	Number of days delayed multiplied by two thousands rupees per infraction.

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S.N.	Parameter	Acceptable Infraction	Penalty (Rupees)	Modality	Calculation Methodology
	(A)	(B)	(D)	(E)	(F)
				and date.	
7.	Delay in repair work as per the Notice Served	To be attended within the stipulated time period.	Five thousands	Physical verification by NKPP or ots agency.	Number of days delayed multiplied by Five thousands rupees per infraction.
8.	Non resolution of customer complain/issues falling within the ambit of Operator by the same customer in the same calendar month.	10 customers	Two Thousands	1. Customer complain database. 2. MC resolution; 3. BMC or its agency's physical verification	If the infraction is more than ten then the penalty shall be = Rupees ten thousand + (number of infraction beyond ten) multiplied Rupees two thousands.

The penalty shall be limited to 10% of amount reserved for O&M under the main contract no. ..... dt. .....

8.6 Service Tax Indemnity

The services to be rendered by Operator shall not attract any service vide Notification No.12/20 Service Tax, dated 17th March 2012.; section 12 (e).

8.7 Technical Efficiency

ATE_n is the "**Actual Technical Efficiency**" of the water supply systems operated by theOperator on behalf of *BMC* in the Accounting Year "n" which is calculated as follows:

$$ATEn = V_{fn} / V_{Sn}$$

Where:

V_{Sn}= Volume of Water Supplied, which shall be equal to water put into distribution system at the input of *[Detail the input point]* which is measured at the Flow meter installed at _____ location.

V_{fn}= Total volume of water billed to the Consumers and Communities for services rendered during the Accounting Year "n".

The technical efficiency shall be determined, after 30 days from the end of each Billing Cycle.

8.8 Direct Payment

The Direct Payment shall include all the payments made by the BMC on behalf of the Operator, which are within the scope of Operator. It shall also include all the Penalties and any other deductions. The Direct Payment (DP) shall be deducted from the Operator's Payment to compute Net Operator Remuneration.

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8.9 Outstanding Amounts

The determination of the actual quantum of amounts due and payable to the Operator and *BMC* in accordance with relevant section of this OU shall be certified by agency appointed by BMC.

8.10 Audit

BMC shall have a right to audit the calculation of any amount set forth in any statement delivered by the Operator to the Escrow Agent. The Operator shall render all reasonable assistance to the *BMC* to conduct such audit. In the event pursuant to such audit, *BMC* and the Operator agree for an adjustment to any amount received by the Operator, the quantum of such agreed adjustment shall be debited from the operator payment which is to be received by the Operator every month, till such time that the balance of such quantum of agreed adjustment is not reduced to zero.

8.11 Tax Deducted at Source

The operator's remuneration shall be liable for Tax Deducted at Source (TDS) as per rate applicable, by statutory law, as applicable, in force as on date.

9. HAND BACK OF PROJECT INFRASTRUCTURES

9.1 Ownership

Without prejudice and subject to the rights granted under this OU, the ownership of the Project Infrastructures , including all improvements made therein by the Operator, shall at all times remain that of *BMC*.

9.2 Operator's Obligations

a. Project Infrastructures

i. The Operator shall on the date of expiry of OUPeriod, hand back on as-is where-is basis, the Project Infrastructures to *BMC* free of cost and in good operable condition. For the purpose of clarity, the Operator shall leave behind all assets in good and operable condition including tools, spares, inventory, machinery and all other movables required for continuous water supply.

ii. Atleast 12 (twelve) months before the expiry of the OUPeriod a joint inspection of the Project Infrastructures shall be undertaken by *BMC* and the Operator. *BMC* shall, within 45 days of such inspection prepare and furnish to the Operator a list of works/ jobs ("**Handback Requirements**"), if any, to be carried out so as to conform to the Construction Requirements and O&M Requirements. The Operator shall promptly undertake and complete such works / jobs at least 3 (three) months prior to the expiry of OUPeriod and ensure that the Project Infrastructures continue to meet such requirements until the same are handed back to *BMC*. On Expiry Date, the parties shall undertake a joint inspection of the Project Infrastructures so as to ensure that Handback Requirements are met. The release of the final installment of the Operator Payment and other outstanding payments, if any, shall be subject to the Handback Requirements being fully met to the satisfaction of *BMC*.

iii. *BMC* shall, within 45 days of the joint inspection undertaken under preceding

clause (ii) prepare and furnish to the Operator a list of items, if any, with corresponding distinctive descriptions, which are to be compulsorily handed back to *BMC*.

iv. The Operator, upon written request by the *BMC* no later than 180 days prior to the Transfer Date, shall provide assistance to the *BMC* during a transitional period of up to 60 days prior to the Transfer Date. ("**Transition Assistance**") The purpose is to ensure a smooth transition between Operator and a subsequent manager of the Project Infrastructures . The scope of the assistance shall be determined by *BMC* provided that the assistance shall be related to only transition services.

v. If the *BMC* makes a request for assistance, the Transition Assistance shall be provided by those staff identified by *BMC* and the identified staff shall be resident in India until the completion of the Transition Assistance.

b. The Operator hereby acknowledges *BMC*'s rights against it upon Termination and its corresponding obligations arising there from. The Operator undertakes to comply with and discharge promptly all such obligations.

9.3 **BMC's Obligations**

BMC shall duly discharge and release to the Operator the final payment of the Operator Payment and other outstanding payments, if any, within 3 months from the Expiry Date, subject to *BMC*'s right to deduct amounts towards:

a. carrying out works/jobs listed under Handback Requirements which have not been carried out by the Operator,

b. purchase of items, which have not been handed back to *BMC* in terms of Clause 9.2(a)(iii), and

c. any outstanding dues, which may have accrued in respect of the Project during the OU Period.

10. Termination

This OU can be terminated:

10.1 **In case of Operator default where:**

(a) The liquidated damage is more than 10% of the bid security [on prorata basis applicable to that quarter] and has happened three consecutive quarter ;

(b) There is persistent default [five continuous] by operator even after notice has been served by BMC;

(c) The Net Operator payment payable by BMC is negative and has happened in three consecutive quarter;

In all the above cases, the security deposit of the Operator shall be forfeited by BMC and no payment shall be made, and it is obligatory on the Operator to vacate the properties / infrastructure facilities for which operator was rendering service within 21 (twenty one) days on the publication of termination of this OU.

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10.2 **In case of BMC default where:**

(a) BMC has failed to pay to Operator in two consecutive quarters to operator's payment;

(b) The Nagar Parishad has passed resolution on recommendation of MC to terminate this contract;

(c) amalgamation of BMC to Bhopal Municipal Corporation (BMC) and BMC desires for termination of OU;

Upon publication of such termination order triggered by the abovementioned event the Operator is liable to get the performance security in full and payment dues from BMC and shall vacate/ handover the asset to BMC within 21 (twenty one) days.

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