JAIPUR DEVELOPMENT AUTHORITY

Tender Document

For

Operation & maintenance of Bisalpur water supply scheme PAP Area SEZ zone 1 to 5 and WSS from Khatwara pump house to Jaisinghpurawas BSUP flats JDA for two year under PHE-I, Jurisdiction, JDA, Jaipur

Cost: - Rs. 31.14 Lacs

NIT No.- 06/2022-23 **Due on: 10.06.2022**

Executive Engineer (PHE-I)
Jaipur Development Authority
Jaipur

जयपुर विकास प्राधिकरण, जयपुर

राम किशोर व्यास भवन, कमरा नं. 135, प्रथम–तल, मुख्य भवन,
इन्दिरा सर्किल जवाहर लाल नेहरू मार्ग, जयपुर–302004

क्रमांक जविप्रा/अधि.अभि. (पीएचई–।)/2022-23/D-189 दिनांक : 25.05.2022

निविदा सूचना

निविदा सूचना सं0 अधि. अभि. (पीएचई–।)/06/2022–23

जयपुर विकास प्राधिकरण द्वारा **"Operation & maintenance of Bisalpur water supply scheme PAP Area SEZ zone 1 to 5 and WSS from Khatwara pump house to Jaisinghpurawas BSUP flats JDA for two year under PHE-I, Jurisdiction, JDA, Jaipur."** जिसकी अनुमानित लागत रू 31.14 लाख के लिए ऑनलाईन बिड्स दिनांक 10.06.2022 को सायं 6:00 बजे तक आमन्त्रित की जाती है। निविदा बोली का ऑनलाईन आवेदन व भुगतान जविप्रा पोर्टल पर करने की अन्तिम तिथी 10.06.2022 को सायं 6:00 बजे तक है। निविदा बोली के दस्तावेजों का विस्तृत विवरण www.sppp.rajasthan.gov.in, www.eproc.rajasthan.gov.in and www.jda.urban.rajasthan.gov.in पर देखा जा सकता है।

निविदा में भाग लेने वालो को निम्न शर्तो की पूर्ति करनी होगी।

1. निविदा दाता जयपुर विकास प्राधिकरण की वेबसाईट www.jda.urban.rajasthan.gov.in पर पंजीकृत हो एवं निविदा में भाग लेने के लिए बोलीदाता को आवेदन करने के लिए दस्तावेज शुल्क, अमानत राशि, आर.आई.एस. एल. प्रोसेसिंग शुल्क ऑनलाईन जमा करनी होगी।
2. ऑनलाईन निविदा प्रस्तुत करने के लिए निविदा दाताओं का राजस्थान सरकार के ई–प्राक्यूमेंट पोर्टल www.eproc.rajasthan.gov.in पर पंजिकृत हो।

(शिव रतन पारीक)
अधिशाषी अभियंता (पीएचई–।)
जविप्रा, जयपुर।

JAIPUR DEVELOPMENT AUTHORITY

Room No. 135, Main Building, First Floor, Ram Kishore Vyas Bhavan, Indira Circle, JawaharLal Nehru Marg, Jaipur – 302 004
Telephone: +91-141-2569696 E.mail: zephe1jda@yahoo.in

No: - JDA/EE/PHE-I/2022-23/D-189 Dated: 25.05.2022

NOTICE INVITING BID

NIB No. : JDA/EE (PHE-I)/06/2022-23

Online Bids are invited up-to 6.00 PM of 10.06.2022 for **"Operation & maintenance of Bisalpur water supply scheme PAP Area SEZ zone 1 to 5 and WSS from Khatwara pump house to Jaisinghpurawas BSUP flats JDA for two year under PHE-I, Jurisdiction, JDA, Jaipur".** Estimated cost of 31.14 Lacs. The last date for Applying Bid and making online payment on JDA portal is up-to 6.00 PM of 10.06.2022 Details may be seen in the Bidding Document at our office or the State Public Procurement Portal website www.sppp.rajasthan.gov.in, www.eproc.rajasthan.gov.in and www.jda.urban.rajasthan.gov.in.

To participate in the bid, bidder has to be:

1. Registered on JDA website www.jda.urban.rajasthan.gov.in, For participating in the Bid, the Bidder has to apply for the Bid and pay the Bidding Document Fee, RISL Processing Fee and Bid Security Deposit, online only.

2. Registered on e-Procurement Portal of Government of Rajasthan www.eproc.rajasthan.gov.in for online e-Bid submission.

(Shiv Ratan Pareek)
Executive Engineer (PHE-I)
JDA, Jaipur

JAIPUR DEVELOPMENT AUTHORITY

Room No. 135, Main Building, First Floor, Ram Kishore Vyas Bhavan, Indira Circle, JawaharLal Nehru Marg, Jaipur – 302 004
Telephone: +91-141-2569696 E.mail: zephe1jda@yahoo.in

Bid No: - JDA/EE/PHE-I/2022-23/D-189 Dated: 25.05.2022

NOTICE INVITING BID

NIB No. : JDA/EE(PHE-I)/06/2022-23

Name & Address of the Procuring Entity	➢ Name: Executive Engineer (PHE-I), Jaipur Development Authority Address: Room No. 135, Main Building, First Floor, Ram Kishore Vyas Bhavan, Indira Circle, JawaharLal Nehru Marg, Jaipur – 302 004 Telephone: +91-141-2569696 E.mail: zephe1jda@yahoo.in
Subject Matter of Procurement	➢ **Operation & maintenance of Bisalpur water supply scheme PAP Area SEZ zone 1 to 5 and WSS from Khatwara pump house to Jaisinghpurawas BSUP flats JDA for two year under PHE-I, Jurisdiction, JDA, Jaipur.** ➢ **Job No. : 014/2022-23**
Bid Procedure	➢ Single-Stage tender (eg. Single-envelope) open competitive eBid procedure at http://eproc.rajasthan.gov.in
Bid Evaluation Criteria (Selection Method)	➢ L1 (eg.Least Cost Based Selection (LCBS)-L1)
Websites for downloading Bidding Document, Corrigendum's, Addendums, etc.	➢ Websites: www.sppp.rajasthan.gov.in, www.eproc.rajasthan. gov.in, www.jda.urban.rajasthan.gov.in
Website for online Bid application participation and payment *	➢ Website: www.jda.urban.rajasthan.gov.in ➢ For participating in the Bid, the Bidder has to apply for this Bid and pay the Bidding Document Fee, RISL Processing Fee and Bid Security Deposit, online only. o Bidding document fee: Rs. 500/- (Rupees Five Hundred only) o RISL Processing Fee: Rs. 1000/- (Rupees One Thousand only) Requisite Bid Security Deposit
Estimated Procurement Cost	➢ INR 31,14,131.00/- (Rupees Thirty One Lacs Fourteen Thousand One Hundred Thirty One Only)
Bid Security Deposit	➢ Amount (INR) : 2% (Rs. 62,283.00/-) for A & Above contractor registered in other department and 0.5% (15,571.00/-) for AA, A, B, C & D Class contractor enlisted in JDA. ➢ Eligibility: Bidder who is A and AA class contractor registered in other Government Department and Bidder registered as contractor AA, A, B, C & D in JDA.
Date/Time/Place of Pre-Bid	➢ NA
Applying Bid and making Online Payment on JDA portal (www.jda.urban.rajasthan.gov.in)	➢ Start Date: 30.05.2022 at 9 :30 AM ➢ End Date: 10.06.2022 at 06.00 PM ➢ In case EMD in from BG Original Bank Guarantee is to be submitted in Room No MB-SF-225A (Room No. of DD (E&B) of Main Building, Jaipur Development Authority by 13.06.2022 10.00AM to 15.06.2022 upto 5.00 PM
Bid Submission on e-Procurement Portal of GOR	➢ Start Date: 30.05.2022 at 9.30 AM ➢ End Date: 10.06.2022 at 06.00 PM
Date/Time/Place of Technical Bid Opening	➢ 16.06.2022 at 3.00 PM
Date/ Time/ Place of Financial Bid Opening	➢ Will be intimated later to the Technically qualified bidders in case of Two Bid

Bid Validity	➢ 120 days from the date of opening of bid
Completion period of work	➢ 24 Months

* Jaipur Development Authority has decided to receive Earnest Money Deposit (EMD) (Bid Security), Tender Fee and RISL processing fee online through JDA Portal. The bid security options available in tender for participants are as mentioned below:

A. Payment Options:

Option-1: Bank Guarantee (BG) against EMD / Bid Security

Bidder may opt Bank Guarantee (BG) against EMD (Bid Security), for which bidder requires to prepare BG before applying in the tender. The details of BG requires to be fed on JDA portal before paying balance amount (Tender Fee + RISL Processing Fee). This amount will be paid through Payment Gateway only, option to make balance payment through EFT (RTGS/NEFT) will not be available.

If bidder does not opt for BG against EMD, options of making complete payment through Payment Gateway or through EFT (NEFT / RTGS) will be available.

Option-2: Electronic Fund Transfer (EFT: NEFT/RTGS)

If the bidder selects payment mode as EFT (NEFT/RTGS), "Paying Slip for EFT (NEFT/RTGS)" will be generated by the system for the complete amount. The payment can be made from any Bank any Branch using this Paying Slip through NEFT/RTGS (Claim against payment made through EFT in any other JDA bank account will not be acceptable and bidder stands disqualified from participation in the bid applied for). After successful transaction through NEFT/RTGS, as per the standard procedures it may take 4 to 24 hours in process of confirmation of EFT through Auto-Process depending on the time of EFT done. Therefore, option to make payment through EFT (NEFT/RTGS) will be available till 48 hours prior to closing date of bid participation.

Option-3: Payment Gateway (Aggregator)

The facility to make payment through Debit Card, Credit Card, Net banking etc., will be available. User can use this facility from anywhere any time till the closing date & time of bid participation.

B. Bid Participation Receipt

After confirming payment, the bidder will get Bid Participation Receipt on the basis of which user will get the payment details along with other details for bidding on e-Procurement portal of GOR.

- In case of BG as the remaining payment will be done through Payment Gateway, on successful transaction the "Bid Participation Receipt" will be generated on real time basis.
- In case complete payment is done through Payment Gateway, on successful transaction the "Bid Participation Receipt" will be generated on real time basis.
- In case complete payment is done through EFT (NEFT/RTGS), on confirmation of payment from ICICI Bank (Auto Process) "Bid Participation Receipt" will be available on Login of Bidder on JDA portal.

Note:

Bidder (authorised signatory) shall submit their offer on-line in Electronic formats both for technical and financial proposal.

In case, any of the bidders fails to pay the Tender Fee, BSD, and RISL Processing Fee, online (subject to confirmation), its Bid shall not be accepted.

To participate in online bidding process, Bidders must procure a Digital Signature Certificate (Type III) as per Information Technology Act-2000 using which they can digitally sign their electronic bids. Bidders can procure the same from any CCA approved certifying agency, i.e. TCS, Safecrypt, Ncode etc. Bidders who already have a valid Digital Signature Certificate (DSC) need not procure a new DSC. Also, bidders must register on http://eproc.rajasthan.gov.in (bidders already registered on http://eproc.rajasthan.gov.in before 30-09-2011 must register again).

JDA will not be responsible for delay in online submission due to any reason. For this, bidders are requested to upload the complete bid well advance in time so as to avoid 11th hour issues like slow speed; choking of web site due to heavy load or any other unforeseen problems.

Bidders are also advised to refer "Bidders Manual Kit" available at eProc website for further details about the e-Tendering process.

Training for the bidders on the usage of e-Tendering System (eProcurement) is also being arranged by DoIT&C, GoR on a regular basis. Bidders interested for training may contact e-Procurement Cell, DoIT&C for booking the training slot.
Contact No: 0141-4022688 (Help desk 10 am to 6 pm on all working days) e-mail: eproc@rajasthan.gov.in Address : e-Procurement Cell, JDA, Yojana Bhawan, Tilak Marg, C-Scheme, Jaipur

The procuring entity reserves the complete right to cancel the bid process and reject any or all of the Bids.

No contractual obligation whatsoever shall arise from the bidding document/ bidding process unless and until a formal contract is signed and executed between the procuring entity and the successful bidder.

Procurement entity disclaims any factual/ or other errors in the bidding document (the onus is purely on the individual bidders to verify such information) and the information provided therein are intended only to help the bidders to prepare a logical bid-proposal.

The provisions of RTPPA Act 2012 and Rules 2013 thereto shall be applicable for this procurement. Furthermore, in case of any inconsistency in any of the provisions of this bidding document with the RTPP Act 2012 and Rules thereto, the later shall prevail.

(Shiv Ratan Pareek)
Executive Engineer (PHE-I)
JDA, Jaipur

Process for Participation & Depositing Payment Online

JAIPUR DEVELOPMENT AUTHORITY, has decided to receive Bidding document fee, RISL Processing Fee and Bid Security Deposit (BSD) through online mode only for which the bidder has to get registered himself on JDA portal www.jaipurjda.org.

To participate in the bid, bidder has to be:

1. Registered on JDA website www.jaipurjda.org(by depositing Rs. 500.00 online, the validity of which remains 3 (three) years).

   For participating in the Bid, the Bidder has to apply for this Bid and pay the Bid Document Fee, RISL Processing Fee and Bid Security Deposit, online only.
2. Registered on e-Procurement Portal of Government of Rajasthan www.eproc.rajasthan.gov.in for online e-Bid submission.

Methods for depositing on line amount

- Online through Internet Banking, Debit Card or Credit Card.
- In case the amount exceeds the online payment limit, the payment may be made through RTGS / NEFT / Transfer in Bank Account Number **675401700586** IFSC Code **ICIC0006754** of ICICI BANK Limited, JDA Campus

  Jaipur.

In case of RTGS / NEFT / Transfer the bidder is required to deposit the requisite amount in the dedicated bank account number as mentioned above and has to get the UTR / Reference number from the bank. This number requires to be updated whiling applying the bid on JDA portal.

While participation in the bid, a receipt will be generated through the system showing the submission details as per **Annexure-4**. The bidder is required to fill the instrument numbers for various heads on e-Procurement portal www.eproc.rajasthan.gov.in as mentioned in the receipt.

More details about Registration Process, Terms and Conditions and FAQ along with contact detail is available on JDA website www.jaipurjda.org under eServices>>JDA Tender

JAIPUR DEVELOPMENT AUTHORITY, JAIPUR
OFFICE OF THE EXECUTIVE ENGINEER PHE-I

SCHEDULE AND SPECIFICATIONS

Name of work :- Operation & maintenance of Bisalpur water supply scheme PAP Area SEZ zone 1 to 5 and WSS from Khatwara pump house to Jaisinghpurawas BSUP flats JDA for two year under PHE-I, Jurisdiction, JDA, Jaipur.

1. NIB No. :- E.E.(PHE-I)/06/2022-23
2. Bid cost :- Rs. 31,14,131/-
3. Cost of the tender documents :- Rs 500/-
4. Earnest Money :- Rs. @ ½% Rs. 15,571/-
   (For Contractors Enlisted in JDA in class AA/A/B/C/D, Jaipur)
   :- Rs. @ 2 % Rs. 62,283/-
   (For Contractors Enlisted in other Govt. Deptts. In Classs- A/AA category)
5. Download of tender documents:- 30.05.2022 to 10.06.2022 (upto 6.00 PM)
6. Date & Time of upload of Tenders :- 10.06.2022 (up to 6.00 PM)
7. Date & Time of Opening Tenders :- 16.06.2022 at 3.00 PM
8. Completion period of work :- 24 months.

SCHEDULE 'A' : INFORMATION USEFUL FOR THE CONTRACTORS :

The tenderer should see the site and fully understand the condition of the site before tendering and include all lead, lifts etc. **Percentage above/Below on the rates as given in the 'G'-Schedule.** The work shall be carried out in accordance with the Rajasthan PWD, PHED and JDA detailed specification and to the entire satisfaction of the Engineer-In charge of the work.

The bid will be opened only of those bidders deposit proper bid security, processing fee, tender fee, GST registration, clearance certificate and copy of registration of contractor in required category are found to be in order. The Bid security, tender fee will be accepted through online payment only.

SCHEDULE 'B' : LIST OF THE DRAWING TO BE SUPPLIED BY THE DEPARTMENT:

The drawings may also be seen in the office of undersigned.

SCHEDULE 'C' : LIST OF THE DRAWING TO BE SUPPLIED BY THE CONTRACTOR:

List of the drawing to be supplied by the contractor NIL. But the contractor shall have to arrange at his own cost drawings required for the work after depositing necessary cost within JDA.

SCHEDULE 'D' : TEST OF THE MATERIALS :

THE TEST OF THE MATERIAL AND WORKMANSHIP SHALL BE CONDUCTED BY THE JDA STAFF AS NECESSARY, THE RESULT OF SUCH TESTS SHOULD CONFIRM TO THE STANDARD LAID DOWN IN THE INDIAN STANDARDS AND OR THE STANDARDS LAID DOWN IN THE DETAILED SPECIFICATION OF THE PUBLIC WORKS DEPTT,. PROPER QUALITY CONTROL IS REQUIRED TO BE MAINTAINED BY THE CONTRACTOR. QUALIFIED PERSONNEL AS REQUIRED UNDER THE CONTRACTOR ENLISTMENTS RULES DULY APPROVED BY THE DEPTT. SHALL HAVE TO BE ENGAGED AT SITE BY THE CONTRACTOR. THE DEPTT. RESERVES THE RIGHT TO ENGAGE SUCH STAFF AND RECOVER THE EXPENSES FROM THE CONTRACTOR ON SUCH ACCOUNT IN CASE OF HIS FAILURE TO DO SO.

SCHEDULE 'E' : SAMPLES OF THE MATERIALS :

The samples of the material to be used by the contractor shall be deposited 15 days in advance with the Engineer In charge and be got approved by him before use.

SCHEDULE 'F' : TIME OF COMPLETION :

The work should start within Ten days of issue of work order and complete within **24 months.**

SCHEDULE 'H' : Special condition Attached separately.

"If any bidder quotes a rate below than the schedule "G" rates, i.e. rates below than "at par", then the bidder has to deposit the difference amount i.e. difference amount of the rates as per "at par" and quoted "below", as "Work Performance Guarantee". This amount has to be deposited before the commencement of work and will be refunded after expiry of DLP only in case of satisfactory performance of work during DLP. Lowest bidder will be issued LOA (Letter of Acceptance) and within 14 days period he has to deposit difference amount in the form of B.G/FDR/NSC. The validity of B.G/FDR/NSC shall be for a period three months beyond of DLP period of work. In case of non deposition of the same in specified period, the bid security will be forfeited. In case work is not completed satisfactorily, the "Work Performance Guarantee" will be forfeited and other action will be taken as per Contract Agreement."

Annexure A : Compliance with the code of Integrity and No Conflict of Interest

Annexure B : Declaration by the Bidder regarding Qualifications

Annexure C : Grievance Redressal during Procurement Process

Annexure D : Additional Conditions of Contract

Annexure E : DLP period for various type of works. Office order D-29 dated 11.03.2016

Annexure F : Payment mechanism for participating in tender: Office order D-399 dated 04.10.2016.

Annexure G : GST Circular for participating in tender: Office order D-172 dated 12.07.2017.

Signature of contractor,
With full address.

Executive Engineer (PHE-I),
JDA, Jaipur

राजस्थान सरकार
नगरीय विकास एवं आवासन विभाग

क्रमांकः– प.01(24)नविवि/ I/2020 लूज

जयपुर, दिनांकः– 20 SEP 2021

आदेश

नगरीय विकास एवं आवासन विभाग के अर्न्तगत विभिन्न विकास कार्यो की निविदाओं में संवेदकों द्वारा बी.एस.आर. दर से कम दर डालने पर अन्तर राशि (AT PAR की दर से जितनी कम है) वर्क परफोरमेंस गारन्टी के रूप में कार्य प्रारम्भ करने से पूर्व ली जाएगी तथा इसे कार्य के सन्तोषजनक रूप से पूर्ण होने के पश्चात दोष निवारण अवधि में कार्य की स्थिति सन्तोषजनक पाए जाने पर, दोषनिवारण अवधि उपरान्त वापस लौटा दिया जावेगा। न्यूनतम दरदाता की बोली नियमानुसार स्वीकृत कर Letter of acceptance (LOA) जारी किया जावेगा एव बी.एस.आर. दर से कम दर की अन्तर राशि की BG/FDR/NSC प्रस्तुत करने हेतु 14 दिवस का समय दिया जायेगा। अन्तर राशि जमा नहीं कराने पर BID SECURITY की राशि नियमानुसार जब्त कर ली जावें। यदि संवेदक वर्क परफोरमेंस गारन्टी राशि जमा कराने के पश्चात कार्य सन्तोषजनक रूप से पूर्ण नही करता है अथवा दोष निवारण अवधि में कार्य में खराबी होती है तो उसकी वर्क परफोरमेंस गारन्टी की राशि जब्त कर ली जावे एवं अनुबन्धानुसार अन्य कार्यवाही भी संपादित की जावें। यह आदेश तुरन्त प्रभाव से लागू किये जाते है। यह आदेश उन सभी निविदाओं पर लागू होगा जो कि भविष्य में जारी होगी तथा वे निविदाएं जो इस आदेश के जारी होने की दिंनाक तक अप्राप्त है, इस सम्बन्ध में निविदा दस्तावेजों में आवश्यक संशोधन तुरन्त संबन्धित उपापन अधिकारी द्वारा किया जावे एवं नवीन सभी निविदाओं में उक्त शर्तों का समावेश किया जाना सुनिश्चित किया जावे।

यह आदेश सक्षम स्तर से अनुमोदित है।

(कुन्जीलाल मीना)
प्रमुख शासन सचिव
नगरीय विकास विभाग

कार्यालय का पता– खाद्य भवन, द्वितीय तल, कमरा नं0 7203, शासन सचिवालय, जयपुर–302005
ई–मेल आई.डी. CEUDHRAJASTHAN@GMAIL.COM

राजस्थान सरकार
नगरीय विकास एवं आवासन विभाग

प्रतिलिपि निम्नांकित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित है।:–

1. विशिष्ट सहायक, माननीय मंत्री महोदय नगरीय विकास एवं आवासन विभाग, राजस्थान जयपुर।
2. निजी सचिव, आयुक्त, राजस्थान आवासन मण्डल, जयपुर।
3. निजी सचिव, शासन सचिव स्वायत्त शासन विभाग, राजस्थान जयपुर
4. निजी सचिव, निदेशक, स्थानीय निकाय विभाग, जयपुर।
5. वरिष्ठ उपशासन सचिव, नगरीय विकास विभाग को प्रेषित कर लेख है कि इस आदेश को नगरीय विकास विभाग की वेबसाइट पर अपलोड करावें।
6. सचिव, विकास प्राधिकरण, जयपुर/जोधपुर/अजमेर।
7. सचिव, नगर विकास न्यास, अलवर, आबू, बाडमेर, भरतपुर, बीकानेर, भीलवाडा, चित्तौडगढ, जैसलमेर, पाली, कोटा, उदयपुर, सीकर, श्रीगंगानगर एवं सवाईमाधोपुर।
8. रक्षित पत्रावली।

मुख्य अभियन्ता (मुख्यालय)
नगरीय विकास विभाग

कार्यालय का पता– खाद्य भवन, द्वितीय तल, कमरा नं0 7203, शासन सचिवालय, जयपुर–302005
ई–मेल आई.डी. CEUDHRAJASTHAN@GMAIL.COM

जयपुर विकास प्राधिकरण, जयपुर

www.jda.urban.rajasthan.gov.in

क्रमांक जविप्रा/अधि. अभि./त.स.नि.अ.–I/2021/डी– 75 दिनांक :–26/8/2021

To

Contractor's Association
Jaipur Development Authority
Jaipur.

जयपुर विकास प्राधिकरण में विभिन्न कार्यो हेतु कार्यो की प्रकृति के अनुसार निविदाऐं, कार्यालय आदेश क्रमांक JDA/Ex.En. (TA to Dir.Engg.-I)/2014-15/D-202 Dated:16.02.2015 द्वारा एकल बिड व Two bid में invite की जाती है। निविदाऐं प्राधिकरण की EC द्वारा अनुमोदित निविदा दस्तावेज के अनुसार की जाती है। निविदाओं के evaluation के दौरान प्रायः यह देखा जाता है कि निविदाकर्ता द्वारा निदिदा प्रपत्र में अंकित दिशानिर्देशों के अनुसार प्रस्तुत किए गये आवश्यक दस्तावेज या तो अधूरे होते है या चाहे गये प्रफोर्मा प्रपत्र के अनुसार नहीं आवेदित किए जाते है। इस कारण से कई बार निविदाएं छोटी–छोटी गलतियों की वजह से निरस्त हो जाती है या Particular bidder disqualify हो जाते हैं। कुछ सामान्य गलतियां निम्नानुसार है:–

1. Schedule 1 to 4 को नहीं भरना।
2. RTPP प्रपत्र A,B,C,D को नहीं भरना व हस्ताक्षर नहीं करना।
3. निविदा दस्तावेज विभिन्न दस्तावेजों पर स्वयं के या नोटेरी के हस्ताक्षर नही होना।
4. रजिस्ट्रेशन की प्रति नहीं लगाना।
5. EMD Receipt नहीं लगाना।
6. Work performance certificate नहीं लगाना।
7. Non Judicial Stamp पर दी जाने वाली सूचनाएं सामान्य प्रष्ठ पर देना।
8. Two bid निविदाओं में वर्ष वार कार्य की मात्राएं एवं राशि नहीं देना।
9. अनावश्यक दस्तावेज उपलब्ध कराना।
10. Online bidding के लिए आवश्यक विभिन्न शुल्क जमा नहीं कराना।
11. GST Clearance Certificate नहीं लगा होना।
12. Certificate having quantities financial year wise should not be missing.
13. Certificate of maximum value of similar nature work executed in any one last financial year out of last five financial year.
14. Annual turn our certificate by CA नहीं लगाना।
15. मशीनरी की details संलग्न नहीं करना।
16. Bid Fee, Bid Processing Fee, Tax Clearance Certificate should not be missing.
17. Completion certificate of required similar nature component is to be enclosed.
18. Litigation History Should be enclosed.
19. Information regarding existing commitments and ongoing works should be enclosed.

इस सम्बन्ध में सभी निविदाताओं को सूचित किया जाता है कि निविदाएं जमा करने से पहले निविदा प्रपत्र में अंकित व चाहि गयी सूचनाएं उचित तरीके से भर कर ही निविदा प्रस्तुत करे जिससे अनावश्यक रूप से निविदा निरस्तीकरण से बचा जा सके। त्रुटीपूर्ण निविदा की स्थिति में निविदाता स्वयं ही जिम्मेदार होंगे।

अधीक्षण अभियन्ता एवं
तक.सहा. निदे. (अभि.–प्रथम)
जविप्रा, जयपुर

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क्रमांक जविप्रा/अधि. अभि./त.स.नि.अ.–I/2021/डी–75 दिनांक :–26/8/2021

प्रतिलिपि निम्न को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित है:–

1. निजी सचिव, आयुक्त, जविप्रा, जयपुर।
2. निजी सचिव, सचिव, जविप्रा, जयपुर।
3. निदेशक (अभियांत्रिकी–प्रथम/द्वितीय/वित), जविप्रा, जयपुर।
4. समस्त अतिरिक्त मुख्य अभियन्ता, जविप्रा, जयपुर।
5. समस्त अधीक्षण अभियन्ता,जविप्रा, जयपुर।
6. समस्त अधिशाषी अभियन्ता,जविप्रा, जयपुर।
7. रक्षित पत्रावली।

अधिशाषी अभियन्ता एवं
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Section A-2
General Conditions of Contract

(Appendix XI of PWF & AR. Govt. of Rajasthan
effective up to date shall be applicable)

Section A-3
Special Conditions of Contract

SPECIAL CONDITIONS OF CONTRACT

1. The department shall hand over the complete scheme alongwith all ancillary units in working conditions to he contractor on award of contract. **The contractor shall be required to furnish a Bank guarantee amounting to 5% of contracted amount**. The Bank guarantee shall be valid for a period of six months beyond the period of contract for operation and maintenance for the safety and security of various components of scheme and appurtenance handed over. The department reserve the right to operate all Bank guarantee or part thereof to meet out any losses against handed over properties in case of damage/theft/mishandling etc. and if the same are not recouped by the contractor. The contractor shall hand over the entire scheme and appurtenances in working condition on completion of contract.
2. **Performance Guarantee : Performance Security shall be solicited from the successful bidder. The contractor shall be required to furnish a performance security amounting to 5% of work order amount. This amount shall have to be deposited by the contractor within 10 days after the award of the work. If the contractor doesn't start the work at time or fails to fulfill the conditions of the contract and the directions given by engineer in charge, this amount shall be forfeited. This performance guarantee will be released with the running bills as per the account rules**.
3. The Contractor shall deploy sufficient and trained/experienced staff for O&M of water supply scheme. The staff engaged for entire operation/maintenance etc. shall have to be in accordance with rules and regulations laid down by the ministry of Labour Welfare Govt. of India. The wages, incentive and other amenities, group insurance, compensation etc. shall be paid to workers as per rules and all expenditure on this account shall be the contractor's responsibility. The necessary registration under rules shall be mandatory. The compensation due to loss of live/retrenchment shall be borne by the contractor.
4. The contractor shall have to do both preventive and breakdown maintenance of scheme as mentioned in scope of work. The pipe lines shall have to be under constant surveillance round the clock and throughout the year (s). All valves and appurtenances shall have to be checked for its proper operation and leakages/burst shall have to be attended immediately. Each major breakdown shall have to be got repaired within 8 hours. Any delay in repairing is highly objectionable. The contractor shall possess all tools and plant required for maintenance work such as crane, Jeep for conveyance, diesel sets. welding sets, dewatering pumps. Pulley blocks etc. ready for use at any time. All material for repair and maintenance of pumping machinery, pipeline, electrical equipment shall be arranged by the contractor at his own cost.
5. Adequate safety precautions against accident during carrying out work of maintenance or due to any other reason whatsoever shall be strictly observed by the contractor at his own cost. A fully equipped necessary medical first-aid kit should be available at Site at all times. In absence of observance of denudate safety precautions, the contractor shall be responsible any unforeseen losses of the equipment or persons dealing it.
6. All material for repair and maintenance of pumping machinery, pipeline, electrical equipment shall be arranged by the contractor at his own cost. Power charges shall be borne by the JDA. However it shall be responsibility of the contractor to collect the bills from JVVNL 7 days before due date of payment by cheque and handling over to Engineer In Charge, also collecting the cheque from JDA and deposit in JVVNL within due date. **Any late payment, penalty will be on part of contractor.**
7. PAYMENT TERMS :
   The due payment for the work allotted shall be payable as below:
   The operation and maintenance cost quoted by the tenderer shall be payable on monthly basis on completion of one month period on presentation of the bill by the contractor along with document required as per clause 3.3 of Scope of work.
8. The complete work as defined in the tender document includes maintenance, operation, periodical overhauling of complete schemes and all associated units of water supply scheme including supply of material required. Any associated work which has not been mentioned here in the tender document but required for anticipated to be done by the tenderer, he should include cost of such work in his offer. The offered rate shall be deemed as inclusive of all such works and items.
9. In the event of any damage/loss of life and property during operation and maintenance of pipe line, the contractor shall be solely responsible and liable for compensation and damages.
10. In case of any break down of pump machinery or starters, the contractor shall immediately inform the **Junior Engineer** / **Assistant Engineer** concerned. In no case the information shall take more than 6 hours to reach the Engineer In Charge staff of JDA. However, simultaneously

he shall make arrangements to install the stand by units to restore the supply. The contractor shall always keep the stand by units of all important items/installations viz. Pump motor, starter ICTP Switch etc. The contractor shall keep stores of all essential items at Site.

11. In case of power breakdown, the contractor shall lodge complaint in the concerned JVVNL Office/Station and get the problem solved. In case of major power problem, the contractor shall immediately inform the **Junior Engineer** / **Assistant Engineer** concerned for seeking help within 6 hours in any case. However, it would be responsibility of the contractor to get it rectified. In case it is unavoidable to restore supply, the contracting agency would arrange to get it properly announce to the public taking advance action for water storage/alternative arrangement.
12. In the event of strike by the operation and maintenance staff employed by the contractor, the department shall be empowered to operate and maintain the water supply scheme at the sole risk and cost of the contractor.
13. In case of unsatisfactory performance by the contractor in operation and maintenance, liquidated damage @ 0.25% of contract value per week of unsatisfactory performance, subject to maximum of 10% of contract value shall be levied as compensation. Regarding such compensation the decision of department shall be final and binding upon the contractor. The reduction in rates from subsequent billss shall be done on account of poor upkeep of scheme by the contractor as under :
    i) A token penalty of Rs. 500/- per day would be levied on account of each day of poor up keep of the pump house or the campus plantation, lawn etc. Decision of Engineer In-charge shall be final in this regard.
    ii) Penalty of Rs. 1000/- per day would be levied on a/c of non operational of tube well due to fault in facilities after allowing 24 hours for rectification.
    iii) Penalty of Rs. 500/- per day per leakage in pipe line would be levied if the leakage is not rectified within 12 hours.
    iv) In case of hand pump if it is not repaired within 8 hours token penalty of Rs. 500.00 shall be levied after the period of 24 hours from the time of receipt of complaint.
14. If any leakage persists in spite of having been brought to the notice of the contractor and the contractor fails to repair the same or delays the repair due to negligence on his part the cost of water so wasted shall be recoverable from the contractor @ Rs. 8.00 per thousand litres. The quantity of water wasted shall be assessed by Engineer in charge.
15. Complaint register shall be maintained by the contractor. Arrangements shall be made by the contractor to attended the complaints satisfactory within 8 hours of receipt of complaints.
16. Log book shall be maintained hourly in prescribed format in respect of running of pump set in pump house, CWR and SR water level. Electric meter reading shall be recorded daily.
17. Contractor shall make arrangements for sweeping and cleaning of the head works/ pumphouse/switch rooms, watering of plants and lawn/cutting of grass etc. including sprinkalling supplying manurs etc.
18. Transportation of material from stores shall be arranged by the contractor.
19. Material provided by the contractor shall be conforming to the latest relevant Indian standards or and as per PHED and certifications.
20. The contractor shall provide all necessary facility. If required to undertake test for quality of material procured by Site at his own cost at the discretion of Engineer in charge.
21. If during maintenance work, any dismantling of existing compound wall or structure is required for facility of the Site previous original shape after completion of the work at his own cost. In no case extra payment shall be allowed by the department on such work eighter for dismantling or repairing and reconstruction of old structures.
22. The work will be carried out strictly as per direction of Engineer Incharge.
23. The cost of assets like pump sets, panel board, valves, pipe line, joints etc. if damaged, replaced, lost or not used properly shall be recovered from the contractor.
24. The rates quoted by the tenderer shall be firm for the contract period. No price escalation shall be admissible during contract period.
25. Personnel :

    The contractor shall depute at least minimum specified staff around the clock to carry out the O&M Work efficiently and satisfactorily. (Contractor may choose to provide more staff if need be as per his assessment).

    All Contractor's personnel employed at the plant at any time during the period covered by the present Contract will be provided by him. JDA is not liable for personnel in any way and cannot be held responsible in the event of litigation of any sort between the Contractor and members of plant personnel or their representatives. Round the clock (24 hours) watch and ward shall be the responsibility of contractor throughout the period.

The Contractor shall undertake to comply with applicable legislation and the code of labour law on matters of health, hygiene and safety, and shall assume responsibility for works required in the event of any change in applicable regulations.

The contractor shall have to maintain one centralize office with minimum staff of 2 personal around the clock and equipped with telephone.

26. It shall be the responsibility of the contractor to ensure that no water supply connections in the area outside the JDA scheme are taken in an unauthorized manner. In case any such unauthorized connection is found by the engineer in charge *then t*he contractor shall be penalized @ Rs. 500/- per connection per month. ***If unauthorized connection could not be disconnect due to any public dispute or any reason then FIR shall be lodged by the Firm (If Required) against defaulter to maintain proper water supply in the schemes.***

27. COMPLETION OF THE CONTRACT :

On the date of Contract Completion or if the Contract is terminated, all the installations, works and equipment placed under the Contractor's responsibility shall be handed over to JDA or any agency, organization specified by it, at no cost, in good working order, except for normal wear and tear. JDA may perform any inspections tests or expert appraisals he shall consider necessary with a view to checking that the property is in good working order. If the works, equipment, plant and/or property is not found in working condition or acceptable condition, the contractor will replace / repair / rectify the same at his own cost to the satisfaction of JDA or third party inspector. The cost of the third party inspector will be borne by the O & M contractor.

At the end of O&M period, the Contractor shall be entitled to receive an Operation and Maintenance Completion Certificate within twenty-one (21) days, of the completion of the Contract.

The delivery of such Completion Certificate will relieve the Contractor from his responsibility as regard to the Operation and Maintenance and confirm that the Contractor has fulfilled all of his obligations under the contract.

28. Time period of work can be increased as per RTPP Rules.

29. Rates of lowest bidder (L-1) for total amount (i.e. sum of part 'A' + part 'B') should remain 'L-1' at the time of finalization of work. If due to any reason L-1 bidder not remain L-1 at the time of finalization of work then the difference amount shall be recovered from L-1 bidder.

30. Experience of Work:

Contractor should have experience of such work for at least 2 years in continuity. The work performance certificate shall be issued by the officer not below the rank of Executive Engineer of GoI/GoR/PSU/Board.

Executive Engineer (PHE I)
JDA, Jaipur

Section A-4

Specifications of Work

SCOPE OF WORK

1. Description of work included here is for complete work including labour, repairs and providing all types of material for maintenance & repairs. This also includes scope of rewinding of all types of motors.

1.1 Running of 3 HP to 15 HP submersible pumping set installed in tube wells to pump water into CWR/SR or distribution system round the clock subject to availability of electricity and actual water requirement.

1.2 Preventive maintenance and all type of repairs of pumps and starters installed in tube wells switch rooms/feeder panels with changing of spare parts etc. including providing of material rewinding of motors and repair of pumps complete in all respect. New pump set shall be provided by JDA incase existing pump set is un-repairable in opinion of EIC.

1.3 Maintenance of Voltmeter/AMETER/MCB is the responsibility of contractor and to be replaced as per requirement on tube well & pump houses etc. No extra payment shall be made to contractor for this work.

1.4 Lowering and unlowering of submersible pumping set in tube wells immediately in case of any break down.

1.5 Operation of all control valves of rising main distribution main, pump house, CWR and SR. leakage removal repair of any control valve shall also be done by the contractor including providing of all types of material.

1.6 Operation of the pumps of clear water pump house round the clock as per direction of Engineer-in-charge.

1.7 Preventive and repair maintenance of centrifugal pumps motors, section delivery pipes, valves and starters panel boards installed in the pump houses. with rewinding of motors and repair of pumps including providing and fixing of all type of spare parts and material.

1.8 To maintain power factor not below 0.9 in any case. In case of default, any surcharge charged by the JVVNL shall be recoverable from the contractor.

1.9 **Hand pumps**

i) Repairing of hand pumps within 8 hours to deliver desired quantity of water. This may include replacement of nut bolts, chain bearing with axle, G.I. Pipes, connecting rods, G. I. Sockets, repairing of cylinder if required.

1.10 Contractor shall make arrangement of identifying leakages. In various pipe lines and there quick removal. All type of material shall be provided by the contractor himself.

1.11 Regular disinfection of produced water by preparation & dosing of bleaching powder solution/operation of equipment for dosing of solution/liquid chlorine, as per the direction of engineer-in-charge to ensure desired levels of residual chlorine.

1.12 Contractor shall be liable of carrying out any such work, not mentioned here in but required for effective operation and maintenance of water supply and for satisfying public complaints, avoid disruption of water supply, avoid low pressure and loss of water etc. as per direction of Engineer-in-charge including providing of all types of material at his own cost.

1.13 **The bleaching powder/liquid chlorine shall be responsibility of contractor as per requirement. *Chlorinator (For testing of residual chlorine in water) should be available at each pump house.* The cost of Bleaching powder/liquid Chlorine shall also be borne by the contractor.**

1.14 Marking of telephone number of contractor on pump house wall and on control feeder/panel of tube well.

1.15 The contractor shall take daily readings of data related to operation of tube well, pump houses, S.Rs., water distribution pressure and duration, residual chlorine in the prescribed format as approved by EIC. He shall also enter these readings in the computer to create data basis which are to be linked to GIS of the water supply scheme if directed by EIC. The GIS is also to be created /prepared by contractor along with Operational Manual within 2 months of award of contract.

1.16 As per direction/Requirement of EIC, water sample testing to be arranged by contractor, for which payment shall be reimbursed to contractor by JDA after submitting the receipt of test to EIC.

2. **PERSONAL**

2.1 The contractor shall maintain centralized office and depute at least minimum required staff as per direction of EIC round the clock to carry out the O&M work efficiently and satisfactorily. The office shall be equipped with telephone and mobile phone.

2.2 The contractor shall visit and inspect all the assets of water supply scheme proposed to be maintained under this contract within 15 days from the date of issue of order and intimate in writing the defects if any to be rectified. The contractor shall made repair and rectification of

these items for which we shall be entitled to get payments from JDA as per approved rates mentioned in Part-B of G-Schedule after verification from EIC.

No separate payment of material for maintenance purpose shall be given to contractor after removal of defects.

3. Documents to be provided by the contractor :

3.1 Operation Log Book:

The Contractor shall keep a permanent record of plant operation (logbook). This log book duly binded shall be kept at the Site and shall be presented as and when required by Engineer In Charge.

The log book shall be provided by the contractor. The contractor shall also indicate any significant modification to the setup characteristics of the installation, shut-downs anomalies or incidents that have occurred with respect to operation.

The log book shall also contain the following as per requirement of EIC:

- Daily report
- Readings of meters Gauges (voltmeter, ammeter, Flow meter, energy meter, pressure gauges at TW's and Pump House recorded twice in a day.
- Record of break down
- Staff attendance

3.2 Operation of complaint book :

The contractor shall maintain a complaint book for any fault in pipe line and hand pump as per approved format at annexure. This binded complaint book shall always be available for inspection to Engineer In-charge.

3.3 Monthly Report :

The monthly report shall include but not be limited to :

a. Copy of log book.
b. all the problem areas in the facility,
c. Copy of complaint book.
d. electricity consumed totally tube well wise.
e. The binded original report shall be attached with running bill without which no running payment shall be released.

4.0 Reduction in Rates

4.1. Repairing of hand pumps within 8 hours to deliver desired quantity of water. This may include replacement of nut bolts, chain bearing with axle, G.I. Pipes, connecting rods, G.I. Sockets, repairing of cylinder if required.

4.2. In case of hand pump if it is not repaired within 8 hours token penalty of Rs.500.00 shall be levied after the period of 24 hours from the time of receipt of complaint.

5.0 Maintenance of Campus

The scope of work for the O&M of maintenance of campus shall included the following but not limit to

1. Sweeping and cleaning of campus on daily basis.
2. Cutting of the grass in the garden fortnightly or as per requirement as per direction of Engineer-in-Charge.
3. Contractor shall be responsible for any theft, damages, sabotaging, security and safety of campus. Any loss on this account shall be recovered from the contractor.
4. Contractor shall be responsible for removing of unwanted trees, shrubs, bushes etc. in campus as & when required as per direction of EIC.

Detail of Scheme Components:

i) WSS Swarn vihar & Rajeev Aawas yojna KKD:
Tube Wells = 9 nos along with sub pump set 3 to 10 KW with panel.
Pump house campus along with 500 KL CWR & 1000 KL OHSR: Centrifugal pump set with panel etc 30 HP Each = 2 Nos.
Pipe Line: UPVC & DI , 90 mm to 315 mm = Approx 16.0 Km.
Pipe Line: DI , 100 mm = Approx 6.0 Km

II) Dewatering pump at Rajeev Aawas Yojna Kiron Ki Dhani:
Dewatering pump with panel etc=2 Nos.(1 working+1 standby)
UPVC pipe line=1.7 Km Approx

III) WSS Harit Vihar
Tube Wells = 6 nos along with sub pump set 5 to 7.5 KW with panel
Pipe Line: UPVC 90 mm to 315 mm = Approx 17.00 Km

IV) O&M of waste water DI pipe line from 3 MLD STP at Paldimeena to Silvan Park, Agra Road, Jaipur
Pipe Line: DI pipe line 200 mm to 150 mm = Approx 4.30 Km

Executive Engineer (PHE-I)
JDA Jaipur

2. SUPPLY OF DI / UPVC PIPES, SPECIALS, VALVES AND LAYING OF PIPES FOR WATER SUPPLY

General

Standards

Except as otherwise specified in this technical specification, the Indian/International Standards and Codes of Practice in their latest version shall be adhered to for the design, manufacturing, inspection, factory testing, packing, handling and transportation of product. Should any product be offered conforming to other standards, the equipment or products shall be equal to or superior to those specified and the documentary confirmation shall be submitted for the prior approval of the Engineer in Charge.

This specification requires a reference to the following standard specifications

IS: 4985	Unplasticized PVC pipes for potable water supplies
IS: 10151	PVC and its copolymers for its safe use in contact with foodstuffs, pharmaceuticals, and drinking water
IS: 10500	Drinking water specification
IS: 12235	Methods of test for unplasticized PVC pipes for potable water supplies
IS: 4669	Methods of test for PVC resin
IS: 12818	Unplasticized PVC screen and casing pipes for bore/tube well
IS: 3400	Methods of test for vulcanized rubber (part-1 to 22)
IS: 1387	General requirements for the supply of metallurgical material
IS: 210	Grey iron casting
IS: 1536	Centrifugally cast (spun) iron pressure pipe for water, gas and sewage
IS: 1537	Vertically cast iron pressure pipe for water, gas and sewage
IS: 1538	Cast iron fittings for pressure pipes for water, gas and sewage
IS: 5531	CI specials for Asbestos cement pressure pipes for water gas & sewage
IS: 1363	Hexagon head bolts, screws and nuts of product grade A and B (part:1-5)
IS: 1367	Technical supply conditions for threaded steel fasteners
IS: 780	Sluice valve for water works purposes
IS: 2906	Specifications for sluice valves for water works purposes
IS: 318	Leaded tin bronze ingots and casting
IS: 8543	Methods of testing plastics: Determination of density of solid plastics
IS: 7181	Horizontally cast iron double flanged pipes for water, gas and sewage.
IS: 8794	CI detachable joints for use with Asbestos cement pressure pipes
IS: 5382	Rubber sealing rings for gas mains, water mains and sewers
IS: 5531	Cast iron specials for asbestos cement pressure pipes for water, gas and sewage
IS: 779	Water meters
IS: 3624	Pressure and vacuum gauges
IS: 341	Black japan, types A, B and C
IS: 9862	Ready mixed paint, brushing, bituminous, black, lead free, acid, alkali, water and chlorine resisting
IS: 1239	Mild steel tubes, tubular and other wrought steel fittings
IS: 7328	High density polyethylene materials for moulding and extrusion
IS: 4984	Specification for high density polyethylene pipes for potable water supplies; sewage and industrial effluents
IS: 554	Dimensions for pipe threads where pressure tight joints are required on the threads
IS: 1592	Asbestos cement pressure pipes - Specifications
IS: 778	Specifications for copper alloy gate, globe and check valves for water works purposes
IS: 12820	Dimensional requirements for rubber gaskets for mechanical joints and push on joint for use with cast iron pies and fittings for carrying water, gas and sewage.
IS: 9523	Specification for DI fittings for pressure pipes for water, gas, and sewage.
ISO: 2045	Single socket for uPVC and uPVC pressure pipes with elastic sealing ring type joints - Minimum depth of engagement
ISO: 2507	PVC pipes and fittings- Vicat softening temperature - Test method and specification
ISO: 3603	Fittings for PVC pipe with elastic sealing ring joints pressure test for leak profanes
ISO: 1167	Thermoplastics pipes for the transport of fluids - Resistance to internal pressure - Test method and basic specification
ISO 3451-5	Determination of Ash: Part-5 - Poly vinyl chloride
ASTM: D 2152	Standard test method for degree of fusion of extruded PVC pipe and moulded fittings by Acetone immersion
MTNL	Mahanagar Telephone Nigam Limited; Technical specifications for cable ducts.
BS: 4772	Specification for DI fittings
IS: 7634- Parts 1-3	Code of practice for plastic pipe works for potable water supplies
IS: 8329	Centrifugally cast (spun) ductile iron pressure pipes for water, gas and sewage.
IS: 12288	Code of practice for use and laying of ductile iron pipes

CPHEEO Manual on Water Supply and Treatment, III edition, Ministry of Urban Development, New Delhi- May 1999.

Ductile Iron Pipe:-

The pipes will be centrifugally cast (spun) Ductile Iron pipes for Water and Sewage confirming to the IS 8329: 2000. The pipes used will be either with push on joints (Rubber Gasket Joints) or Flanged joints. The class of pipe to be used shall be of the class K-7.

The pipes shall be coated with bitumen as per appendix C and have factory provided cement mortar lining in the inside as per the provisions of Appendix B of the IS 8329: 2000.

The pipes will be supplied in standard length of 5.50 and 6.00 meters length with suitably rounded or chamfered ends. Each pipe of the push on joint variety will also be supplied with a rubber EPDM gasket. Any change in the stipulated lengths will be approved by the Engineer – in charge. The gaskets will confirm to the IS 5382:1985.

The gaskets should also be supplied by the manufacturer of the pipes. They should preferably be manufactured by the manufacturer of the pipes. In case they are not, it will be the responsibility of the manufacturer of the pipes to have them manufactured from a suitable manufacturer under it's own supervision and have it tested at his/sub contractors premises as per the contract. The pipe manufacturer will however be responsible for the compatibility and quality of the products.

The flanged joints will confirm to the Clause 6.2 of IS 8329. The pipe supply will also include one rubber gaskets for each flange.

Inspection and Testing**:**

The pipes will be subjected to following tests for acceptance:

Visual and dimensional check as per Clause 13 and 15 of IS 8329

Mechanical Test as per Clause 10 of IS 8329

Hydrostatic Test as per Clause 11 of IS 8329

The test reports for the rubber gaskets shall be as per acceptance tests of the IS 5832 and will be in accordance to Clause 3.8

The sampling shall be as per the provisions of the IS 8329

Marking

All pipes will be marked as per Clause 18 of IS 8329 and show as below:

Manufacturer name/ stamp

Nominal diameter

Class reference

A white ring line showing length of insertion at spigot end

Packing and Transport:

The pipes should be preferably transported by road from the factory and stored as per the manufacturer specifications to protect damage.

Specials for Ductile Iron Pipes

General

This section covers the general requirements for Ductile Iron (DI) fittings suitable for Tyton joints to be used with Ductile Iron pipes with flanged and Tyton jointing system.

Types of specials

The following types of DI fittings shall be manufactured and tested in accordance with IS: 9523 or BS: 4772.

flanged socket

flanged spigot

Double socket bends (900, 450, 22 1/2 0, 11 1/4 0)

Double socket branch flanged tee

All socket tee.

Double socket taper.

All Flanged Tee.

All Flanged taper.

Supply

All the DI fittings shall be supplied with one rubber ring for each socket. The rubber ring shall conform to IS: 12820 and IS: 5382 as described in the preceding chapter. Flanged fittings shall be supplied with one rubber gasket per flange and the required number of nuts and bolts.

General

This section covers the requirements for lubricant for the assembly of Ductile Iron pipes and specials suitable for Tyton push-in rubber ring joints

Specification

The lubricant has to have the following characteristics:

must have a paste like consistency and be ready for use

has to adhere to wet and dry surfaces of DI pipes and rubber rings

to be applied in hot and cold weather; ambient temperature 0 - 50 ℃, temperature of exposed pipes up to 70 ℃

must be non toxic

must be water-soluble

must not affect the properties of the drinking water carried in the pipes

must not have an objectionable odour

has to inhibit bacterial growth

must not be harmful to the skin

must have a shelf live not less than 2 years

Acceptance tests

They shall be conducted in line with the provisions of the IS 9523

Packing

All the DI fittings shall be properly packed with jute cloth. Rubber rings shall be packed in polyethylene bags. Rubber rings in PE bags and nuts, bolts etc. shall be supplied in separate jute bags.

The fittings should also be supplied by the manufacturer of the pipes. They should preferably be manufactured by the manufacturer of the pipes. In case they are not, it will be the responsibility of the manufacturer of the pipes to have them manufactured from a suitable manufacturer under it's own supervision and have it tested at his/sub contractors premises as per the contract. The pipe manufacturer will however be responsible for the compatibility and quality of the products.

Laying and jointing of DI pipes

Pipes should be lowered into the trench with tackle suitable for the weight of pipes. For smaller sizes, up to 200 mm nominal bore, the pipe may be lowered by the use of ropes but for heavier pipes suitable mechanical equipment have to be used.

All construction debris should be cleared from the inside of the pipe either before or just after a joint is made. This is done by passing a pull-through in the pipe, or by hand, depending on the size of the pipe. All persons should vacate any section of trench into which the pipe is being lowered

On gradients of 1:15 or steeper, precautions should be taken to ensure that the spigot of the pipe being laid does not move into or out of the socket of the laid pipe during the jointing operations. As soon as the joint assembly has been completed, the pipe should be held firmly in position while the trench is back filled over the barrel of the pipe.

The designed anchorage shall be provided to resist the thrusts developed by internal pressure at bends, tees, etc.

Where a pipeline crosses a watercourse, the design and method of construction should take into account the characteristics of the watercourse to ascertain the nature of bed, scour levels, maximum velocities, high flood levels, seasonal variation, etc. which affect the design and laying of pipeline.

The assembly of the pipes shall be made as recommended by the pipe manufacturer and using the suitable tools.

The socket and spigot ends of the pipes shall be brushed and cleaned. The chamfered surface and the end of the spigot end have to be coated with a suitable lubricant recommended by the manufacturer of the pipes. Oil, petroleum bound oils, grease or other material which may damage the rubber gasket shall not be used as lubricant. The rubber gasket shall be inserted into the cleaned groove of the socket. It has to be checked for correct positioning.

The two pipes shall be aligned properly in the pipe trench and the spigot end shall be pushed axially into the socket either manually or with a suitable tool specially designed for the assembly of pipes and as recommended by the manufacturer. The spigot has to be inserted up to the insertion mark on the pipe spigot. After insertion, the correct position of the socket has to be tested with a feeler blade

Deflection of the pipes -if any- shall be made only after they have fully been assembled. The deflection shall not exceed 75 % of the values indicated by the pipe manufacturer.

Anchoring of the pipeline

Thrust blocks shall be provided at each bend, tee, taper, end piece to prevent undue movements of the pipeline under pressure. They shall be constructed as per design of ENGINEER- IN- CHARGE according to the highest pressure during operation or testing of the pipes, the safe bearing pressure of the surrounding soil and the friction coefficient of the soil.

Leakage Test

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. 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 2 km. After successful organization and execution of tests the length may be extended to more than 2 km after approval of the Engineer in Charge.

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. Generally, the following steps are required which shall be monitored and recorded in a test protocol if required

The testing conditions for the pipelines are summarized as follows:

Maximum hydrostatic test pressure for DI K-7 pipes shall be 2.0 times of maximum design pressure in the pipeline.

Pre test and saturation period with addition of make-up water

Pressure:	Test pressure
Duration:	3 hrs for DI pipes without cement mortar lining / 24 hrs for DI pipes with cement mortar lining

Pressure test with addition of make-up water

Pressure:	Test pressure
Duration:	3 hrs

Test criteria for DI pipes: Q = 1 liter per km per 10mm of pipe per 30 m test pressure per 24 hrs.

All pressure testing at site should be carried out hydrostatically. The pipes shall be accepted to have passed the pressure test satisfactorily, if the quantity of water required to restore the test pressure as per the latest codal provisions does not exceed the amount 'Q', calculated by the above formula.

If it is required to test a section of a pipeline with a free end, it is necessary to provide temporary support against the considerable end thrust developed by the application of the test pressure. The end support can be provided by inserting a wooden beam or similar strong material in a short trench excavated at right angle to the main trench and inserting suitable packing between the support and pipe end.

The pipeline stretch will pass the test if the water added during the test period is not exceeding the admissible limits. No section of the pipe work shall be accepted by the Engineer in charge until all requirements of the test have been obtained.

On completion of a satisfactory test any temporary anchor blocks shall be broken out and stop ends removed. Backfilling of the pipeline shall be completed.

Failure to pass the test

All pipes or joints which are proved to be in any way defective shall be replaced or remade and re-tested as often as may be necessary until a satisfactory test shall have been obtained. Any work, which fails or is proved by test to the unsatisfactory in any way, shall be redone by the Contractor.

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. Disinfection of drinking water pipelines shall be made by engineer- in charge.

Supply of Ductile Iron Pipes:-

The Contractor will have to supply DI pipes manufactured by manufacturer who has been in business of supply of DI pipes rubber ring jointed and have proven record of successful supply and testing of pipeline for minimum one year.

PVC Pipes

Scope

This section of the document specifies the required properties of the pipes made of unplasticized polyvinyl chloride (uPVC) with socket(s) suitable for elastomeric sealing ring type joints for conveyance of water under pressure for supply of drinking water. The pipes are intended to be used for buried water mains with ambient atmospheric temperature reaching up to 50°C and soil surface temperature rising more than 65°C. The stipulations given in this document for uPVC pipe which are not covered by any other code/standard, shall be governed by the provisions of IS 4985

The pipes will be supplied with one end plain with chamfer and other end socket suitable for elastomeric sealing ring type joints in accordance with IS: 4985.

Each pipe shall be supplied along with a rubber ring suitable for the socket for elastomeric sealing ring type joints.

Material

The material from which the pipes are made shall consist substantially of unplasticized polyvinyl chloride conforming to IS: 10151, to which may be added only those additives that are absolutely needed to facilitate the manufacture of the polymer, and the production of sound, durable pipes of good surface, finish, mechanical strength and opacity. The total quantity of additives like plasticizers, stabilisers, lubricants and fillers shall not exceed more than the percentage specified in IS 4985.The bulk density of uPVC pipe shall be 1.39 to 1.44 g/ cm^3.PVC resin of suspension grade K-66/K-67 shall be used for extrusion of uPVC pipe.

Classification

The pressure rating of pipes shall be of class-3 and class-4 in accordance with IS: 4985 with a maximum continuous working pressure at 27 ^{0} C of 6 and 8 kg/cm^2

Dimensions of the pipes and the sockets

The dimensions and tolerances of pipes shall comply to clauses of IS: 4985.

The tolerance on outside diameter and wall thickness of pipe shall be as per Table-1 given in IS: 4985.

The dimensions of the socket for elastomeric sealing ring type joint shall be in accordance with Clause 7.2.1.2 and Tables 4 and 5 of the IS 4985

The pipe shall be supplied in straight lengths of 6 m with tolerance of + 20 mm and -0 mm. The effective length of socket pipe shall be considered as shown in Figure-3 of IS: 4985.

Physical & chemical properties

The pipe shall confirm to the Clause 10 of IS 4985-2000 for its physical and chemical properties except for the density and ash content provisions which shall be as per the stipulations of Clause 1.2.2 of this chapter.

The colour of the pipes shall be dark grey.

Influence on water intended for human consumption shall be governed by IS: 12235.

All plastic and non plastic material for components of the uPVC piping system e. g. Elastomeric sealing ring, lubricants, when in permanent or in temporary contact with water which is intended for human consumption, shall not adversely affect the quality of the drinking water.

Mechanical properties

Hydrostatic strength of the pipes

The pipes and integral sealing ring will confirm to internal hydrostatic pressure in accordance with Clause 11.1 and sampling as per annex D of IS 4985

Tests and conformity criteria

Quality assurance from the manufacturer

The following in house tests shall be carried out on the raw material:
Grade (K-value)
Particle size distribution
Bulk density of resin
Bulk density of compound

The manufacturer will also have the following tests conducted from Standard Test Laboratory
Effect on water quality
Internal Hydrostatic Test (Type)

Acceptance Test

All uPVC pipes of the same size and class manufactured on a particular machine shall be considered as a lot for quality control inspection. However, the maximum size of a lot shall not be more than 1000 pipes.

The sampling procedure and scale of sampling for visual inspection and dimensional requirements shall be as per given in Annexure-D of IS: 4985.

The pipes shall be tested for lot acceptance.

The following acceptance tests shall be conducted in accordance with IS: 4985 and IS: 12235.

Visual and dimensional check
Reversion test.
Vicat Softening test
Ash Content
Bulk density
Resistance to external blows
Internal hydrostatic pressure test for pipes and joints
Opacity

Markings

Each pipe shall be clearly marked as indicated below:
Manufacturers name and trademark
Outside diameter in mm.
Class of pipe and pressure rating
Month and year of manufacturing
Length of pipe
Marking of insert depth of spigot

Each pipe shall also be marked in centre strip as circumference 1" wide at intervals not more than 3 meters to show the class of pipe.

Class 3 – Green
Class 4 – Brown

Packing and transport

The socket and spigot end of all the pipes shall be provided with tightly fitted end caps, protecting the inside of the pipes effectively against dirt etc. The end caps shall be of suitable high density (HD) plastic material in any colour other than black. They shall be fitted to the pipes prior to packing and transportation.

The pipes shall be transported to the store and site by trucks in pre packed bundles to ensure adequate protection during transport. At the time of packing and stacking of pipes the sockets shall be alternated within the pile and shall project sufficiently for the pipes to be correctly supported along their whole length. The pipes shall rest uniformly on the vehicle bed over their whole length during transport, carefully placed and firmly secured against unwarranted movement during transportation to the satisfaction of Engineer In charge.

Supply of uPVC Pipes:-

The Contractor will have to supply uPVC pipes manufactured by manufacturers having ISO 9000-2000 certification and who has been in the business of supply of uPVC pipes with elastomeric rubber ring joints and have proven record of successful supply and testing for minimum one year. The Contractor will have to present a certified photocopy of this certification for manufacturer he propose to procure his material from before starting supplies.

Rubber Rings for PVC Pipes and Specials

Scope

This section prescribes the requirements for materials used for vulcanized solid rubber sealing rings for water supply at ambient temperature. It covers rubber rings for uPVC pipes.

Material

The rubber shall be free from extractable substances which impart taste, odour or toxicity to water. The rubber or its compound shall not content toxic materials, such as compounds of mercury, antimony, manganese, lead or copper.

The rubber rings shall be vulcanized from Ethylene propylene (EPDM). The colour of material shall be black.

The rubber ring shall be long term termite resistant.

The sealing ring shall have no detrimental effect on the properties of the pipe and shall not cause the test assembly to fail the functional requirements

Appearance and homogeneity

The rings shall be homogeneous, free from porosity, grit, excessive blooms, blisters, or other visible surface imperfections. The fin or flash shall not exceed 0.4 mm and width 0.8 mm.

Rubber rings shall be made of a properly vulcanized virgin rubber compound containing no scrap or reclaim.

The surface of the rubber rings shall be smooth, free from pitting cracks, blisters, air marks, and any other imperfection that may affect its behavior in service. The body of the rubber ring shall be free from porosity and air pockets.

Dimensions and tolerances.

The profile and dimensions of the rubber ring shall be such that under normal circumstances efficient sealing can be expected for the socket dimensions.

The nominal measurements and the tolerances shall be in accordance with the figures stated by the manufacturer and they shall be laid down in a drawing.

Physical requirements.

The rubber ring shall have the ISI mark and will confirm to IS: 5382 and comply with the following physical properties when tested in accordance with IS: 3400

Properties	EPDM
Tensile Strength	11 MPa
Hardness	50, +5, -4 IRHD
Elongation at break	Min. 400%
Compression Set Test condition 27degree C., 72h, Max. permanent deformation	12%
Water absorption Test	Max. 10%
Accelerated ageing Test Hardness Tensile Strength Elongation at break	 -5 to +8 IRHD ± 20% -30% to +10%

Marking

Each sealing ring shall be permanently marked with:

The Manufacturer's name or trade mark.
The month and year of manufacture
Diameter of pipe for which the ring is suitable.
Type of rubber material

Testing

The scale of sampling and criteria for conformity shall be in accordance with IS: 5382. The following tests shall be conducted for conformity.

Hardness
Tensile strength
Elongation at break
Compression set
Accelerated ageing
Water absorption
Stress relaxation

The test pieces shall be cut from the finished product. Where this is not possible because the sample would be too small, the manufacturer shall provide test slabs from the same batch of rubber and vulcanized to the same degree and in the same manner as that of the rubber from which the rubber rings have been manufactured.

Wherever it is not possible to cut standard test piece from the rings, for determination of tensile strength and elongation at break, test piece in the shape of dumb bell as shown in Figure - 2 of IS: 5382 shall be used with the rate of traverse of moving grip as 15 cm/min.

Packing

Maximum 10 pieces of rubber ring shall be packed in one polyethylene bag. The colour of the polyethylene bags shall be preferably black or dark grey. The rubber rings packed in polyethylene bags shall be supplied in bituminized polyethylene lined jute bags to protect them from undue exposure to light and heat.

The rubber rings should also be supplied by the manufacturer of the pipes. They should preferably be manufactured by the manufacturer of the pipes. In case they are not, it will be the responsibility of the manufacturer of the pipes to have them manufactured from a suitable manufacturer under its own supervision and have it tested at his/sub contractors premises as per the contract. The pipe manufacturer will however be responsible for the compatibility and quality of the products.

Specials for uPVC Pipe System

uPVC specials

Manufacturing and type of sealing joint

All the uPVC fittings shall be fabricated from class-4 uPVC pipes only.

The socket dimensions shall be in accordance with the pipe sockets. The rubber sealing rings for pipe/specials shall be in accordance with the specifications .

Type of specials

Double sockets

The double socket special shall be suitable for elastomeric sealing ring type joint as per the enclosed drawing. The dimensions of the fitting shall be as given in Table below.

Table for dimensions of Double Sockets

S No.	Suitable for pipe OD (mm)	Min. length of fitting (h) mm	Min. spacer (l) mm
1	63	235	20
2	90	266	20
3	110	288	20
4	140	314	20
5	160	334	20
6	225	404	30
7	280	460	30
8	315	485	30

Double Socket Bends:

The fabricated bends shall be suitable for elastomeric sealing ring type joint as per the enclosed drawing. The dimensions of the double socket bends shall be as given below:

S.No.	Outside diameter in	Radius (r) mm	Angle of bend in degrees	L1 = L2

	mm			
1	63	221	90	359
		221	45	230
2	90	315	90	469
		315	45	285
3	110	385	90	551
		385	45	326
4	140	490	90	674
		490	45	387
5	160	560	90	756
		560	45	428
6	225	788	90	1023
		788	45	562
7	280	980	90	1268
		980	45	674
8	315	1100	90	1410
		1100	45	746

Quality control tests

All the fitting shall be tested for socket dimension, workmanship/surface finish and leak tightness in accordance with for uPVC pipes.

Supply of specials

All the PVC fittings shall be supplied along with necessary rubber rings. The rubber rings shall be supplied in black coloured polyethylene bags. The fittings shall be packed and supplied in jute bags or in cardboard or wooden boxes according to their size.

The fittings should also be supplied by the manufacturer of the pipes. They should preferably be manufactured by the manufacturer of the pipes. In case they are not, it will be the responsibility of the manufacturer of the pipes to have them manufactured from a suitable manufacturer under it's own supervision and have it tested at his/sub contractors premises as per the contract. The pipe manufacturer will however be responsible for the compatibility and quality of the products.

Valves

General

The sluice valve will confirm to IS: 780/ IS: 2906.

The material to be supplied under this sub-section shall include but not be limited to the following:

All necessary fittings including bolts, nuts, gaskets, backing rings, counter flanges, jointing material, strainers etc. as required.

Sluice Valves

Scope

This section covers the requirements for non rising stem type sluice valve from 50 mm to 600 mm size. The valves will be used for water supply on line installations in upright positions, up to 450 C working temperature, with double flange and cap or hand wheel, for manual operation.

Nominal pressure and dimensions

The working pressure of the valves shall be 10 kg/cm2 (1 MPa)

The dimension and mass of the sluice valves shall be in accordance with IS: 780 for sizes from 50 to 300 mm and IS: 2906 for sizes 350 to 600 mm.

The flanges and their dimensions of drilling shall be in accordance with IS: 1538 (part-I to XXII).

Material

The material for different component parts of sluice valve shall conform to requirements given below:

S No.	Component	Material	Ref. to IS	Grade / designation
1	Body, bonnet, wedge, stuffing box, gland, thrust plate, hand wheel cap. etc.	Grey cast iron	210	FG 200
2	Stem	Stainless steel	6603	AISI 431, AISI 410
3	Wedge nut	Leaded tin bronze	318	LTB 2
4	Body seat ring, wedge facing ring	Leaded tin bronze	318	LTB 2
5	Bolt	Carbon steel	1363	Class 4.6
6	Nut	Carbon steel	1363	Class 4
7	Bonnet gasket	Compressed fiber board	2712	C
8	Gland packing	Asbestos	4687	Nil

Coating

All sluice valves shall be coated by dipping in a bath of tar base composition as given in Clause 7 of IS: 780 for sizes from 50 mm to 300 mm and Clause 8 of IS: 2906 for sizes from 350 mm to 600.

All components susceptible to corrosion attack shall be coated internally and externally. Protective coating shall always be applied to the individual components before they are assembled, following shot blasting to give good adhesion.

Marking, testing and inspection

The standard marking and packing of the valves shall be done as per Clause 10 and 11 of IS: 780. The direction of rotation for OPEN, CLOSE position shall be marked on the hand wheel and on the bonnet of the valve.

Testing of sluice valve shall be done for close end in accordance with IS: 780 for sizes from 50 mm to 300 mm and IS: 2906 for sizes from 350 mm to 600.

All the valves shall be inspected for flaw detection test in accordance with IS: 780. for sizes from 50 mm to 300 mm and IS: 2906 for sizes from 350 mm to 600.

The design, construction material, manufacture, inspection, performance and testing shall comply with all applicable Indian Standards and Codes. Nothing in the specification will be construed to relieve the supplier of this responsibility.

Air valves

Scope and general design feature

This section covers the requirements of automatic double ball air valves 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 Air Valves shall conform to IS14845. The design shall be such that higher the rate of flow the greater the resultant down thrust keeping the ball 'glued' to its seat until the last drop of air is expelled from the pipe system.

The valves shall have an integrated sluice valve. If required, they shall be installed on a flange welded on the MS pipe / special. The possible air velocity (inflow and outflow) must be at least 10 m/s. The working pressure of the air valves shall be 10 kg / cm^2 (1Mpa).

Construction feature

The flow of air should be as unobstructed as possible. The low-pressure orifice shall be in the same axis as the main discharge/incoming airflow and must have a diameter sufficiently large.

The cone angle in the low-pressure (large orifice) chamber should be carefully calculated and there should be adequate height to allow for free movement of the vulcanite ball in the low chamber. The annulus around the low-pressure vulcanite covered ball is to be generously proportioned for discharge of air under various differential pressures.

The orifice shall be carefully profiled to allow the requisite flow of air under varying differential pressure. It shall be in moulded synthetic rubber such that even after extended contact the vulcanite covered ball does not stick to it when the line pressure becomes zero.

In the high-pressure chamber the orifice shall be in profiled in such a manner that the rubber-covered ball is not damaged even after extended contact. There should be machined guide in the chamber, which ensures that the ball travels vertically and makes contact with the nipple and seals off the orifice without fail.

Material

The material for different component parts of the air valve shall conform to requirements given below:

S No.	Component	Specifications
1	Body	Cast Iron conforming to IS: 210 GR FG 200
2	High Pressure Cover	Cast Iron confirming to IS 210 GR FG 200
3	Low Pressure Cover	Cast Iron confirming to IS 210 GR FG 200
4	Cowl	Cast iron confirming to !S 210 GR FG
5	High Pressure Orifice Plug	Stain less steel conforming to AISI 410
6	Low pressure ball	Vulcanite covered seasoned timber
7	High pressure ball	Rubber covered seasoned timber
8	Lower pressure seat ring	Dexine (Nitrile rubber)
9	Isolating sluice valve	Conforming to IS: 780 – 1984
10	Spindle for sluice valve	Stainless steel conforming to AISI 410
11	Bolts and nuts	Mild steel

The body and seat of the valve shall withstand a working pressure of 10 kg/cm^2 for at least 15 minutes.

Inspection

Third Party Inspection:

The following items of supply will be got inspected from approved inspecting agency (CEIL, SGS. RITES) at manufacturers premises before dispatch at his own cost.

1. Ductile Iron pipes, rubber gaskets & specials
2. Sluice valves,
3 upvc pipes

Specifications for Laying and Jointing of Pipe Line System for Water Supply

Preparatory work

The contractor will inspect the route along which the pipe line is proposed to be laid. He should observe/ find out the existing underground utilities/ construction and propose an alignment along which the pipeline is to be laid. He should make all efforts to keep the pipe as straight as possible with the help of ranging rods. Wherever there is need for deviation, it should be done with the use of necessary specials or by deflection in pipe joints (limited to 75% of permissible deflection as per manufacturer). The alignment as proposed should be marked on ground with a line of white chalk and got approved from Engineer In-Charge. The Contractor will than prepare an L-Section along this alignment showing the location of proposed pipeline. The L-section should be got approved from the site Engineer. The position of fittings, valves, should be shown on the plan.

Alignment and the L-Sections

The alignments, L-section (depth of laying) and location of specials, valves and chambers may be changed at site in co-operation with and after approval of the Engineer in Charge. The minimum cover to the top of the pipe shall be 1 m.

Standards

Except as otherwise specified in this technical specification, the Indian Standards and Codes of Practice in their latest version, National Building code, PWD specification of the state of Rajasthan and Manual of water supply of GOI shall be adhered to for the supply, handling, laying, installation, and site testing of all material and works.

Tools and equipment

The contractor has to provide all the tools and equipment required for the timely, efficient and professional implementation of the work as specified in the various sections of the contract and as specified by the instructions of manufacturers of the pipes and other material to be handled under this contract. On demand he shall provide to the Engineer in Charge a detailed list of tools and equipment available. If in the opinion of the Engineer in Charge the progress or the quality of the work cannot be guaranteed by the available quantity and type of tools and equipment the contractor has to provide additional ones to the satisfaction of the Engineer in Charge. The Contractor will always have a leveling instrument on site.

Handling and laying of pipes

Transportation of pipes and specials & Storage:-

The Contractor has to transport the pipes and other materials from manufacturer to the site of laying as indicated by the Engineer in Charge. Pipes should be handled with care to avoid damage to the surface and the socket and spigot ends, deformation or bending. Pipes shall not be dragged along the ground or the loading bed of a vehicle. Pipes shall be transported on flat bed vehicles/trailers. The bed shall be smooth and free from any sharp objects. The pipes shall rests uniformly on the vehicle bed in their entire length during transportation. Pipes shall be loaded and un-loaded manually or by suitable mechanical means without causing any damage to the stacked pipes.

The transportation and handling of pipes shall be made as per IS 12288. Handling instructions of the manufacturers of the pipes shall be followed. All precautions set out shall be taken to prevent damage to the protective coating, damage of the jointing surfaces or the ends of the pipes.

Whatever method and means of transportation is used, it is essential that the pipes are carefully placed and firmly secured against uncontrolled movement during transportation to the satisfaction of engineer in charge.

Cranes or chain pulley block or other suitable handling and lifting equipment shall be used for loading and un-loading of heavy pipes. However, for pipes up to 400 mm nominal bore, skid timbers and ropes may be used. Where using crane hooks at sockets and spigot ends hooks shall be broad and protected by rubber or similar material, in order to avoid damage to pipe ends and lining. Damage to lining must be repaired before pipe laying according to the instructions of the pipe manufacturer. Pipes shall not be thrown directly on the ground or inside the trench.

When using mechanical handling equipment, it is necessary to employ sufficient personnel to carry out the operation efficiently with safety. The pipes should be lifted smoothly without any jerking motion and pipe movement should be controlled by the use of guide ropes in order to prevent damage caused by pipes bumping together or against surrounding objects.

Rolling or dragging pipes along the ground or over other pipes already stacked shall be avoided.

The pipe should be given adequate support at all times. Pipe should be stored on a reasonably flat surface free from stones and sharp projections so that the pipe is supported through out its length. In storage, pipe racks should provide continuous support and sharp corners of metal racks should be avoided. Socket and Spigot pipes should be stacked in layer with sockets placed in alternate ends of the stack to avoid lop sided stacks.

Pipes should not be stored inside another pipe. On no account the pipes should be stored in stressed or bent condition or near the sources of heat. Pipes should not be stacked more than 1.5 m high and pipes of different sizes and classes should be stacked separately. The ends of the pipes should be protected from abrasion. The pipes should be protected from U.V. rays and excessive heat at all times. Their storage facility should be well ventilated.

The Contractor shall provide proper and adequate storage facilities to protect all the materials and equipment's against damage from any cause whatsoever and in case of any such damage/theft, the Contractor shall be held responsible.

The contractor will lay the pipelines along the alignments as per the layout given by the Engineer in Charge. The layout shall be given keeping in view the information available regarding existing services like water lines, sewers, telephone and electric lines/ cables. In the event some services fall in the alignment of lines to be laid, the contractor shall have to shift such services for which a provision has been made in the BOQ. The contractor shall take all due care to avoid damage to any such services and, in case of any damage occurring to them in progressing the work, the Contractor shall make good the same at his own cost. No additional time shall, however, be allowed on this account.

Stringing of pipes along the alignment

The pipes shall be laid out properly along the proposed alignment in a manner that they do not create any significant hindrance to the public and that they are not damaged.

Stringing of the pipe end to end along the working width should be done in such a manner that the least interference is caused in the land crossed. Gaps should be left at intervals to permit the passing of equipment across the working area. Pipes shall be laid out that they remain safe where placed and that no damage can occur to the pipes and the coating until incorporated in the pipeline. If necessary, pipes shall be wedged to prevent accidental movement. Precautions shall be made to prevent excessive soil, mud etc. entering the pipe.

Generally, the pipes shall be laid within two weeks from the date of their dispatch from the manufacturer /store .

Pipe trench

Trench excavation

The trench excavation of pipeline shall be in accordance with IS 12288. Pipe trenches shall be excavated to the lines and levels shown on the drawings or as directed by the Engineer in Charge. The depth of the excavated trench shall be as given in the drawings or as directed by the Engineer in Charge. The width of the trench at bottom between the faces of sheeting shall be such as to provide 200 mm clearance on either side of the Diameter. No pipe shall be laid in a trench until the section of trench in which the pipe is to be laid has been approved by the Engineer in Charge.

The depth should be sufficient to provide a cover not less than 1000 mm. It may be necessary to increase the depth of pipeline to avoid land drains or in the vicinity of roads, railways or other crossings. Care should be taken to avoid the spoil bank causing an accumulation of rainwater.

The bottom of the trench shall be trimmed and leveled to permit even bedding of the pipes. It should be free from all extraneous matter, which may damage the pipe or the pipe coating. Additional excavation shall be made at the joints of the pipes, so that the pipe is supported along its entire length.

All excavated material shall be stacked in such a distance from the trench edge that it will not endanger the work or workmen and it will avoid obstructing footpaths, roads and driveways. Hydrants under pressure, surface boxes, fire or other utility controls shall be left unobstructed and accessible during the construction work. Gutters shall be kept clear or other satisfactory provisions made for street drainage, and natural watercourses shall not be obstructed.

To protect persons from injury and to avoid damage to property, adequate barricades, construction signs, torches, red lanterns and guards, as required, shall be placed and maintained during the progress of the work and until it is safe for traffic to use the roadways. All materials, piles equipment and pipes which may serve as obstruction to traffic shall be enclosed by fences or barricades and shall be protected by illuminating proper lights when the visibility is poor.

As far as possible, the pipe line shall be laid below existing services, like water and gas pipes, cables, cable ducts and drains but not below sewers, which are usually laid at greater depth. Where it is unavoidable, pipeline should be suitably protected. A minimum clearance of 150 mm shall be provided between the pipeline and such other services.

Trees, shrubbery fences, poles, and all other property and surface structures shall be protected. Tree roots shall be cut within a distance of 50 cm from pipe joints in order to prevent roots from entering them. Temporary support, adequate protection and maintenance of all under ground and surface structures, drains, sewers and other

obstructions encountered in the progress of the work shall be provided. The structures, which will be disturbed, shall be restored after completion of the work.

Where water forms or accumulates in any trench the Contractor shall maintain the trench free of water during pipe laying.

Wherever necessary to prevent caving, trench excavations in soils such as sand, gravel and sandy soil shall be adequately sheeted and braced. Where sheeting and bracing are used, the net trench width after sheeting shall not be less than that specified above. The sides of the excavation shall be adequately supported at all times and, except where described as permitted under the Contract, shall be not battered.

The Engineer in Charge in co-operation with the Contractor shall decide about the sheeting/ bracing of the trench according to the soil conditions in a particular stretch and taking into account the safety requirements of the Contractor's and Engineer- In- Charge's staff. Generally, safety measures against caving have to be provided for trenches with vertical walls if they are deeper than 2.0 m.

Trench excavation to commensurate with the laying progress

The work of trench excavation should be commensurate with laying and jointing of the pipeline. 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 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.

Bedding of the pipes

The trench bottom shall be even compact and smooth so as to provide a proper support for the pipe over its entire length, and shall be free from stones, lumps, roots and other hard objects that may injure the pipe or coating. Holes shall be dug in the trench bottom to accommodate sockets so as to ensure continuous contact between the trench and the entire pipe barrel between socket holes.

Laying and jointing of pipes

General

The pipes will be cleaned in the whole length with special care of the spigot and sockets on the inside/ outside to ensure that they are free from dirt and unwarranted projections. The whole of the pipes shall be placed in position singly and shall be laid true to profile and direction of slope indicated on longitudinal sections. The pipes shall be laid without deflection in a straight alignment between bends and between high and low points. Vertical and horizontal deflections between individual pipes need the approval of the Engineer in Charge. In no case the deflection shall be more than 75 % of those recommended by the manufacturer.

Before pipes are jointed they shall be thoroughly cleaned of all earth lumps, stones, or any other objects that may have entered the interior of the pipes, particularly the spigot end and the socket including the groove for the rubber ring.

Pipes and the related specials shall be laid according to the instructions of the manufacturers and using the tools recommended by them.

Cutting of pipes shall be reduced to a minimum required to conform to the drawings. Cutting has to be made with suitable tools and according to the recommendations of the manufacturer. The spigot end has to be chamfered again at the same angle as the original chamfered end. Cutting shall be perpendicular to the Centre line of the pipe. In case of ductile iron pipes the cut and chamfered end shall be painted with two coats of epoxy paint. If there is no mark for the insertion depth on the spigot end of the (cut) pipe it shall be marked again according to the instructions of the manufacturer.

Before pipes are jointed they shall be thoroughly cleaned of all earth lumps, stones, or any other objects that may have entered the interior of the pipes, particularly the spigot end and the socket including the groove for the rubber ring. End caps are removed only just before laying and jointing

All specials like bends, tees etc. and appurtenances like sluice or butterfly valves etc. shall be laid in synchronization with the pipes. The Contractor has to ensure that the specials and accessories are ready in time to be installed together with the pipes.

At the end of each working day and whenever work is interrupted for any period of time, the free ends of laid pipes shall be protected against the entry of dirt or other foreign matter by means of approved plugs or end caps.

When pipe laying is not in progress, the open ends of installed pipe shall be closed by approved means to prevent entrance of trench water and dirt into the line.

No pipe shall be laid in wet trench conditions that preclude proper bedding, or when, in the opinion of the Engineer in Charge, the trench conditions or the weather are unsuitable for proper installation.

The pipeline laid should be absolutely straight unless planned otherwise. The accuracy of alignment should be tested before starting refilling with the help of stretching a string between two ends of the straight stretch of pipes to rectify possible small kinks in laying.

Special Cast Iron fittings and Accessories

Normally when pipeline is laid, a certain number of cast iron fittings such as tees, bends, reducers, etc, and special fittings such as air or sluice valves are required.

Laying of Fittings – All cast iron fittings shall be plain ended to suit the outside diameter of Asbestos cement pressure pipes and to the class and diameter of pipe manufactured. When using such cast iron fittings, they are jointed by cast iron detachable joints only. For cast iron specials having flanges, they are jointed in the pipeline with cast iron flange adaptors having one end flanged and the other plain ended.

Anchorages - It should particularly be noted that the cast iron joints do not hold pipe ends within it firmly. During working or test pressure, there will be tendency for the pipe ends or special ends to slip out of the joint, more so with the case of blank end cap used for closure of pipeline and all degree bends and tees. In order to keep them firmly in the pipeline, anchoring of these specials are necessary against the direction of thrust.

The anchorage shall consist of either concrete cast-in-situ or masonry built in cement mortar. The anchors shall be extended to the firm soil of the trench side. The shape of the anchors will depend on the kind of specials used. They shall be spread full width of trench and carried vertically by the side and over the special to about 15 cm. The bearing area on sides of the trench will be proportional to the thrust and to bearing capacity of the sides of the trench.

Back filling and tamping

The soil under the pipe and coupling shall be tamped in order to provide a firm and continuous support or the pipeline. Tamping shall be done either by tamping bars or by using water to consolidate the back fill material.

The initial back fill material used shall be free of large stones and dry lumps. In stony areas the material for initial back fill can be shave from the sides of the trenches. In bogs and marshes, the excavated material is usually little more than vegetable matter and this should not be used for bedding purposes. In such cases, gravel or crushed stone shall be hauled in.

The initial back fill shall be placed evenly in a layer of about 100 mm thick. This shall be properly

Consolidated and this shall be continued till there is a cushion of at least 300 mm of cover over the pipe.

If it is desired to observe the joint or coupling during the testing of mains they shall be left exposed.

Sufficient back fill shall be placed on the pipe to resist the movement due to pressure while testing.

Balance of the back fill need not be so carefully selected as the initial material. However, care shall be taken to avoid back filling with large stones, which might damage the pipe when spaded into the trench.

Pipes in trenches on a slope shall have extra attention to make certain that the newly placed back fill will not become a blind drain in effect because until back fill becomes completely consolidated, there is a tendency for ground or surface water to move along this looser soil resulting in a loss of support to the pipe. In such cases, the back fill should be tamped with extra care and the tamping continued in 100 mm layers right up to the ground level.

Anchoring of the pipeline

Thrust blocks shall be provided at each bend, tee, taper, end piece to prevent undue movements of the pipeline under pressure. They shall be constructed as per actual design and approval of Engineer in Charge according to the highest pressure during operation or testing of the pipes, the safe bearing pressure of the surrounding soil and the friction coefficient of the soil.

Testing of the upvc pipelines

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 as per IS Code.***

Specifications for submersible pump sets

Supply of submersible pumping sets comprising of submersible motor of sufficient horse power coupled to a pump of duty condition as specified in the schedule of rates, having detailed specification given below:

Description:

8.1 The submersible pump set should be in accordance with the provision of IS 8034-1976 (specification for submersible pumps sets for clear cold fresh water) amended or revised upto date.

8.2 The electric motor is to operate through 3 phase, 50 c/s A.C. Supply of 400 +10% volts at 3000 rpm (synchronize).

8.3 The pump sets shall normally be installed in bore wells and should be suitable for grounding water generally available in Rajasthan. The water to be handled by the pump sets may have total solids 3000 ppm (max), turbidity 50 ppm chlorides 1000ppm (max) pH value between 6.5 to 8.5.

8.4 The discharge casing, suction casing, and pump bowl shall be made from cast iron grade FG 200 IS 210-1978. The pump shaft and bearings sleeves are to be made of stainless steel as per IS 1570(part IV) 1972 or CA 6mm confirming to ASTMA 296 with 12 % chrome steel carbon content upto 0.1% for mixed flow impellers materials should be chrome steel having minimum hardness of 200 BHN , or Aluminum Bronze as per grade AB- II or BS 1400. In case of radial flow impellers material may be aluminum bronze with hardness 140-180 BHN. The casing wear ring (where required and bearing bush shall be made from lead tin bronze grade 4 of IS 318-1981.

8.5 The motor starter should be easily rewirable and winding should be easily accessible to facilitate checking and locating of any fault without disturbing the full winding and to replace the default coils. It should be possible to rewind the motor with readymade pre-tested coils.

8.6 The stator body should preferably be shrunk fitted instead of being only press fitted. The stator body should be rigidly welded on the stamping assembly and adequate to arrangement of stamping inside the stator body preferably by providing matching grooves in stamping assembly and stator body. Metal rings with rounder fingers should be provided on both ends of stampings. Threaded joints in the motor should be avoided to prevent damage due to rest. Bearing housing should be threaded but located in spigot and by suitable tie bolts. The motor as well as stator should be impregnated under vacuum and the motor should be backed repeatedly under controlled conditions to ensure long life of varnish and give a hard finish to the motor surface. The rotor shaft should be provided with stainless steel sleeves in the bearing portion. The rotor should be made of corrosion resisting material.

8.7 The thrust bearing should be water lubricated and of hydro dynamic Mitchell type and should be able to take all untoward loads at most unfavorable running conditions. It should have sieving metallic thrust pads.

8.8 The rotating element (as assembled rotors) of pump should be dynamically balanced at high speeds.

8.9 The manufacture should have facilities for dynamic balancing at high speed, vacuum impregnated of rotors and stators high tension electrical testing and pump testing. Details in this regard be enclosed with tender.

8.10 Performance curves of various pumps offered should be enclosed. The curve should he for duty range showing discharge/head, discharge/efficiency, discharge/BHP and discharge/submergence relations.

8.11 The cable shall conform to IS 694 (Part I) 1964 and IS 694 (Pt. II) 1964 specifications for PVC insulated cables (for voltage upto 1100 volts) Pt. I with copper conductors.

8.12 The coupling shall be preferably of mesh type rigid sleeves coupling of stainless steel non slip type with matching groove collar and key way arrangement.

8.13 The duty point of pumps shall be located near the peak efficiency and three should not be any steep fall in QHH V/s efficiency curve in the head range of 10% and 25%.

8.14 Efficiency – The efficiency, motor efficiency and overall efficiency should be clearly mentioned in the offer. Please note that no negative tolerance in overall efficiency with be allowed.

8.15 The motor shall conform to IS 9283-1979 and IS 325-1978 (amended up to date) the later a far it can be applied to submersible motors regarding electrical performance. The motor shall not get overloaded throughout the working range of pump even when voltage is as low 358 volts.

8.16 Inspection :- A certificate of inspection of submersible pumping set will be produced by contractor along with the bill to Engineer-in-Charge. All the testing and inspection charges will be paid by the contractor himself.

9. Specifications for feeder pillar panels:

Feeder Pillar Panels suitable for 10.0 H.P. Electric Motors complete with star delta starters and DOL starter upto 5 HP Electric motor and other accessories as detailed below operated on 3 phase 50 cycles A.C. supply 415 volts.

1 No, push button operated air Break fully automatic Star Delta Starters in sheet steel enclosure for 10.0 H.P. electric motors confirming to IS: 8544 (amended upto date). Motor Contactor Rating

	Main Delta Star
Upto 10.0 H.P.	16 Amps

1 No. Miniature Circuit breaker (TPN) confirming to IS: 8828-1978 of adequate capacity, 32 Amp

9.3 1 No. 0-500 volts 100mm diameter round projection volt meters class 1.5 with selector switch confirming to IS: 1248 (amended upto data)

9.4 1 No. 100mm diameter round projection mounting type ammeter of suitable range class 1.5 with selector switch (details shown below) confirming to IS: 1248 (amend upto date) 0 to 30 amp range

9.5 3 Nos. Indicator Lamps RYB indication.

9.6 Provision for supply and fixing of power capacitor 4 KVAR ISI mark with the panel, space of requisite standard KWH meter may be provided in the panel with thick bakelite sheet for fixing of KWH meter

9.7 3 Nos. 415 volts rewirable type fuses (for 32 Amp)

9.8 1 No. Danger plate

9.9 1 no. Name plate.

9.10 1 No. Single phase preventor based on negative sequence voltage sensing to protect the submersible motor against single phasing should have facility to automatically restart the pump on resumption of power supply with auto/manual selection.

9.11 Space for Flow meter display unit.

9.12 Space for Pressure Display.

9.13 Neutral link.

9.14 Connecting strip 60 Amp 9 way

The above accessories and equipment will be mounted in a floor mounting type sheet shall enclosures made out of 16 gauge MS sheet and having locking arrangement and 2 Nos. earthing bolts, The complete panels board should be synthetic enamel painted with two coats after applying basic primer over washed and clean metal surface. The panel board will be fixed/mounted on a angle iron framework made of 35x35x5mm angle iron so that the same could be floor mounted and installed at site. The panel will be fully factory wired and ready for connection to the equipment.

Size of feeder pillar panels exclusive of canopy Height 1200mm, Width 850mm, Depth 400mm.

Size of Canopy: 940 mm W, 400mm D, 100mm H Tapering. Stand size mode of angle iron 35x35x5mm H= 360mm. (Drawings of feeder panel enclosed)

The panel shall be mounted on masonry platform with 50mm thick CC 1:2:4 flooring having size 1000mm x 600mm protruding 45cm above the existing road level.

Detailed specification of Individual Items:

9.15 Starters

Push button operated air break starter fully automatic suitable for starting squirrel cage induction motor working on 3 phase 415 Volts (+10% to –15%) 50 c/s A.C. supply each starter shall comprising as per IS:8444 (amended upto date)

Over Current Device:

1 No. Triple pole thermal bimetllic/over current relay accurately calibrated and temperature compensated with differential system for phase failure and unbalanced load protections.

Control Assembly

It shall confirm to IS: 2959-1975 and shall comprise of 3 triple pole contractors of specified capacity one for main, one for the star position and one for delta position. Each contractor shall be provide with 1 No. And 1 NC auxiliary unit.

Vacuum impregnated machine wound and backed coil with inter layer paper insulation/epoxy cost suitable for tropical conditions. The coil should be safe from mechanical damage in case of accidental mishandling and should have high resistance to moisture and suitable for operation of 415 (+10% to –15%) volt supply.

Contractors should be of suitable silver alloy to ensure long life and the contact system should be double break and designed to keep bounce to the minimum. Provision for mechanically interlocking the contractors should be available.

The manner of removal of fixed and moving contacts should be easy. The thermal connections preferable should be require disconnection during contact replacement.

The coil should be easily accessible and the coil replacement as well as the contactor assembly should be simple without likely to pull out. Screws should be provided with retaining arrangement.

(C) Timer:

The change over from star to delta position shall be automatic and sharp through thermal/pneumatic/electronic timer (adjustable approximately from 5 to 20 seconds or 2 to 12 seconds)

(D) Start and Stop Push Button:

Shrouded and mounted on the cover.

9.16 Control Switch:

The miniature circuit breaker shall be of adequate rating suitable for operation at 415 V-3 phase, to C/s A.C. supply. The breaker mechanism shall be of quick make break and trip free. The components of the breaker should be designed to last the life of the breaker with no maintenance what so ever including greasing.

The circuit breaker shall have unambiguous mechanical trip indication by means of the position of the knob in addition to ON/OFF.

The circuit breaker shall trip in less than or equal to 25 milli-seconds short circuit conditions.

9.17 Painting

All steel work should undergo a process of de-greasing, pickling in acid and cold rising, passivating and sprayed with a high corrosion resistance primer. The finishing treatment should be application of two coats of synthetic enamel paint.

9.18 Wiring

The panel should be completely factory wired for the connection to the equipment at site, wiring should be made in such a way that it is easily accessible for observations repair work without disturbing other components. Contactor should be PVC insulated confirming to IS 694

The make of various components should be as below

Miniature Circuit breaker : L&T/MDS/Standards/Indo Asian make or any equivalent mark.
Ampere/Voltmeter : IMP /AE/Essmoar equivalent ISI mark
Starter/Contactor/|Relay Timer : L&T/Siemens/BCH
Porcelain Rewirable fuse unit : Havells/Standard or any equivalent ISI mark.
Selector Switch : Kaycee/Becon/Salzer
Single Phase preventor : Minilec/or any equivalent ISI mark
Capacitor L&T and equivalent ISI marked

Schedule - B

Complete set of drawing can be obtained from office of Executive Engineer (PHE-I).

Schedule - C (Sample of material)

The contractor shall submit the list of samples of the following items in specified quantities as mentioned against each item before the commencement of work or within 15 days of issue of work order which ever is earlier, to the Engineer – In – Charge for carrying out of test as specified under schedule "D" and shall obtain his approval before issuing any such material at site.

Sample of the following items shall be submitted for each source of supply free of cost by the contractor.

1. Gravel 0.25 cu.m.
2. PVC wire mesh 0.5 Sq.m.

Sample of earth strata /tube well at interval of 6m or change of strata for each tube well separately in fine and clear bottles.
Water samples in clear bottles for chemical analysis at every 3m interval.
Any other sample that may be required by Engineer- in – Charge from time to time.
Water sample after development in two bottles for each tube well (The Chemical analysis from PHED laboratory shall be submitted to Engineer -in-charge, no payment shall be made by department in this regard)

Schedule - D (Tests to be carried out)

The following test to be carried out by the Executive engineer or any other agency authorized by him to undertake such test.

The Engineer – in – Charge or his authorized representative will carry out as and when considered necessary for the quantity and quality of work done and for the materials used in the work. The contractor, unless otherwise specified shall provide all facilities and arrangements to undertake these tests and all testing charges shall be borne by the contractor.

The contractor shall supply required quantity of samples desired by executive engineer, the samples so obtained shall be sent to authorized laboratory for testing, if the material is not found according to the specifications the entire cost of samples and testing shall be borne by the contractor and the entire lot of supply will also be rejected.

Schedule - E (Site Conditions)

The work is located at different places in JDA region.
The view of the having visited the site, the contractor should sign the certificates as below:

It is certified that I/We……the tenderer for the above work having visited the site and have and aquanted myself/ourselves with all conditions and accordingly I/we am/are quoting the rates in confirmation of above facts and in stipulation of the other conditions as mentioned in the tender form.

Schedule - F

The complete work defined in the scope of work in the schedule A and detailed itemswise under schedule G appended herewith shall be completed in all respect and to the entire satisfaction of the Engineer – in – Charge and hand over to the JDA or to the person nominated by the JDA to take over within stipulated period from the date of issue of order to the contractor. The date of commencement of the rate contract shall be 10 days after issue of work order. The completion period of each tube well or number of tube well shall be as per clause 12 of Special Terms and Conditions

Schedule - G

Schedule “G” given separately. The contractor is liable to honour of the any adjoining property and any other work for the damage ascertained on account of this work, while in progress.

SCHEDULE –H

The unit rates of items which are not covered under the basic schedule of rates mentioned above by Addl. Chief Engineer and the cost analysis will be done, if needed.

The scope of work for each item of work in schedule–G is as per detailed drawing.

All leads and lifts, centering and strutting are included in the item rates for such work and no extra payment on account of extra lead lifts centering and strutting is admissible. The contractor should invariably account all these items involved in work in his percentage premium rates offered in the tender by him, such claim shall be paid to him.

The quantities of different items and schedules–G are estimated, which may vary as per actual site conditions. The contractor will have to execute the work as per site conditions and will not paid any thing extra on account of non execution one or more items. He is also required to assess the areas of the site of works. The extra work shall not be done by the contractor until and unless the quantity and unit rates for such extra work is agreed between JDA and the contractor and written order to such effect is issued by the competent authority. All extra work shall be paid as per basic schedule of rates on which schedule-G has been prepared.

In case the unit rates or extra works to be carried out is not covered under basic schedule of rates as per specified then the unit rate shall be decided by analysis of prevailing market rate. Such basic items shall be considered for detailed analysis of the extra work and not tender premium shall be paid over and above such rates

SPECIFICATION OF ALL FLANGED CI SPECIALS

The cast iron flanged specials (all flanged tee, flanged tapers, bends, blank flanges, and Puddle collar) shall be according to IS: 1538.

The specials shall be internally and externally coated with hot applied (dip) bituminous paint. All flanged specials shall be used for nominal pressure of 10 kg/cm2 (1Mpa).

Flanged specials shall be supplied with the required bolts, nuts and rubber gaskets. The nut & bolts shall be supplied in jute bag; rubber gasket shall be supplied in polyethylene bags.

The length and size of the puddle collars to be fixed at different places of the structures shall be decided by the Engineer in Charge. Pipe make shall be got approved from Executive Engineer, District Division I Jaipur before using it on site

MS PIPES & SPECIALS

MS PIPELINE

1.1.1. SPECIFICATIONS

This part of the specification covers manufacturing, supply, delivery, lowering, laying, jointing, internal lining, outer coating, testing and commissioning of mild steel pipes. Manufacturing of MS pipes shall be done in conformity with IS: 3589. The MS pipes shall be fabricated out of steel plates or strips of fresh mild steel coils, spirally welded / longitudinal welded, having butt-welded joints with beveled ends, as per IS 3589.

The minimum thicknesses of MS pipes to be provided in this project are 6mm.“The outer surface shall be coated with high built epoxy paint to RDSO specification no. M&C/PCN/III/88 to give a dry film thickness of 250 microns”.

MS SPECIALS

The MS specials, wherever required, shall be made out of MS pipes not less than 6mm thick and shall be internally and externally coated with anti corrosive paint with red oxide as primer coat.

MS LEAK REPAIR CLAMPS

The MS Leakage Clamps used during testing or maintenance shall be made out of 5mm thick MS strip and of appropriate width. The civil work which are required to done in this contract shall be confirming to PWD manual and to the satisfaction of Engineer in Charge.

SPECIFICATIONS OF SUBMERSIBLE PUMP SETS

(AS PER IS 8034) (AMENDED UP TO DATE)

1.0 SCOPE

This includes supply of ISI marked submersible Pumping Sets as per IS 8034 comprising of Submersible Motor of sufficient horse-power coupled to a Pump of duty conditions as specified in scope of work and G schedule as per detailed specifications given below. The Motor shall have cable leads of minimum 15 meters length externally.

2.0 DESCRIPTION

2.1 The Submersible Pumping Sets shall be ISI marked as per IS 8034 (specification for Submersible Pumping Sets for clear, cold fresh water) (amended or revised up to date) and should be as per provisions/ specifications mentioned hereunder.

2.2 The electric motor is to operate through 3 phase 50 c/s A.C. Supply of 415 volts + 6% & -15% volts i.e. between 352 to 440 Volts. The preferred speed shall correspond to 2 pole motors [3000 rpm (synchronous)]

2.3 The Pump sets shall normally be installed in bore wells and should be suitable for conditions existing for ground waters generally available in Rajasthan. The water to be handled by the Pump sets may have Total dissolved Solids 3000 PPM (max), Turbidity 50 PPM (silica scale) Chlorides 1000 PPM (max) and PH value between 6.5 to 8.5.

3.0 DETAILS OF PUMPS

3.1 The material of construction of various components of the pump shall be as under:

S.No.	ITEM	MATERIAL OF CONSTRUCTION
1	Discharge casing (if provided)	Cast Iron Grade FG 200 of IS: 210-1993
2	Suction casing	Cast Iron Grade FG 200 of IS: 210-1993
3	Pump bowl	Cast Iron Grade FG 200 of IS: 210-1993
4	Diffuser	Cast Iron Grade FG 200 of IS: 210-1993 or glass filled Polyphenylene oxide (modified PPO) or glass filled Polycarbonate of IS 8034
5	Pump shaft	Stainless steel grade X 04 Cr12, X 12 Cr12 or X 20Cr13 of IS: 6603
6	Impeller for radial flow/ mixed flow	Bronze grade LTB 2 of IS: 318 or Stainless steel grade X 12 Cr12 of IS 6911 or IS 6603 or glass filled Polyphenylene oxide (modified PPO) or glass filled Polycarbonate of IS 8034
7	Casing wear ring (if provided)	Bronze Grade LTB 4 of IS:318
8	Bearing bush in discharge & suction	Bronze Grade LTB 4 of IS:318

3.2 The thickness of impeller vanes shall be not less than 1.5mm at tips and 3mm at the base.

3.3 The rotating element (as assembled rotors) of Pumps should be dynamically balanced at high speed. Each metallic impeller shall be dynamically balanced to grade G 6.3 of IS-11723 (part-I) for ensuring smooth performance free of vibrations.

The maximum outside diameter of the pump set corresponding to nominal diameter of the tube well shall be as given below:

3.4	Nominal Diameter of the Tubewell	3.5 3.6	Maximum Outside Diameter of Submersible Pump sets
3.7	150 mm	3.8	142 mm
3.9	200 mm	3.10	192 mm

3.5 The coupling shall be preferably of mesh type rigid sleeves coupling of stainless steel non-slip type with matching groove, collar and key way arrangement.

3.6 The pump shall be tested for operating head rage of not less than +10 percent and -25 percent of the user's specified duty head (i.e. head as specified in enclosed Annexure-I). The duty point of pumps shall be located near the peak efficiency and there should not be steep fall in Q V/S H, efficiency curve in the head range of +10% and -25%. This entire range should be on the stable portion of the curve

4.0 DETAILS OF MOTOR

4.1 The motor shall conform to IS: 9283-1995 (amended up to date). The motor shall be of continuous duty (type S1) specified in IS 12824: 1989.

4.2 The Motor stator should be easily rewire-able and winding should be easily accessible to facilitate checking and locating of any fault without disturbing the full winding and to replace defective coils. It should be possible to rewind the motor with readymade pre tested coils.

4.3 The stator body should preferably be shrunk fitted instead of being only press fitted. The stator body should be tightly welded on the stamping assembly and adequate arrangement should be provided for stopping of rotation or shifting of stampings inside the stator body preferably by providing matching grooves in the stamping assembly and the stator body. Metal rings with rounded fingers should be provided on both ends of stamping.

4.4 Threaded joints in the motor should be avoided to prevent damage due to rusting. Bearing housing should not be threaded but located on spigot and held by suitable bolts.

4.5 The rotor as well as stator should be impregnated under vacuum or air drying and both should be baked repeatedly under controlled conditions to ensure long life of varnish/ galvanising/ chrome plating/epoxy and to give a hard finish to the motor surface. The rotor should be dynamically balanced at high speed.

4.6 All the material and components for the motors shall be suitable for application in respect of corrosion resistance and mechanical performance continuously under water. The typical materials to be used for various parts of motor are given below: -

S.No.	ITEM		MATERIAL OF CONSTRUCTION	
4.7	4.8	Bearing housing &	4.9	Grey cast iron Gr. FG-200 of IS 210:1993
4.10	4.11	Motor shaft	4.12	Chromium steel Gr. 04 Cr 13, or 12 Cr 13, or 20 Cr
4.14	4.15	Bearing bush	4.16 4.17	Leaded tin bronze LTB 3, LTB 4 or LTB 5 of IS 318:1981 or Resin bonded carbon metal or Rubber or Rubber lined
4.18	4.19	Rotor laminations	4.20	Electrical sheet of IS 648:1994
4.21	4.22	Rotor conductor	4.23	Electro grade copper of IS 613:1984
4.24	4.25	Stator laminations	4.26	Electrical sheet steel of IS 648:1994
4.27	4.28 4.29	Stator winding wire Conductor	4.30	Electro grade copper of IS 613:1984
4.31	4.32	Stator winding wire insulation	4.33	PVC or with polymer of IS 8783:1978
4.34	4.35	Breather diaphragm	4.36	Nitrile rubber
4.37	4.38	Thrust bearing	4.39 4.40	Vulcanized fibre v/s chromium steel or vulcanized fibre v/s bronze
4.41	4.42	Cable gland	4.43	Nitrile rubber
4.44	4.45	Stator Casing	4.46 4.47	Grey Cast iron FG 200 of IS 210:1993 or Carbon steel (sheet or pipe) or stainless steel sheet Gr. 20 Cr 13 of IS 1570:(Part 5):1985

4.48 The materials indicated are typical. Manufacturers may use materials of properties superior as per the properties of materials indicated in manufacturing submersible motor.

4.49 The thrust bearing should be water lubricated and of hydrodynamic Mitchell type and should be able to take all untoward loads at most unfavorable running conditions. It should have swiveling metallic thrust pads.

4.50

4.51 The output motor ratings shall be as per Clause 6.3 of IS 9283:1995 (amended upto date). The motor rating beyond 15 kW shall be as declared by the manufacturer. The motor shall be capable of delivering rated output

with variations in value of voltage and frequency for Category B as per clause 6.2.2 of IS 9283:1995.

4.52

4.53 The motor shall be suitable for entire working range of pump from +10% to -25% of the user's specified duty head (i.e. head as specified in enclosed Annexure-I). The motor shall not get overloaded in the entire working range. The criteria for checking non-overloading shall be that maximum current in entire range shall not exceed the limits specified in Table 1 (clause 7.1) of IS 8034: 2002 for various ratings between 1.1 kW to 15 kW. In case of motor rating more than 15 kW the manufactures has to declare maximum current, which the motor can take. The permissible limit of maximum current in the operating head range for checking non-overload requirements is 1.07 times of Maximum current declared by the manufacturer.

5.0 SUBMERSIBLE CABLE

5.1 The cable shall be shall be ISI marked as per IS 694:1990. It shall be PVC insulated and PVC sheathed, flexible, 3 core flat type having copper conductors suitable for working voltage up to and including 1100 Volts. Size of Cable shall be as under:

S.No.	Motor KW Rating (in KW)	Cable Size 3 core flat with copper conductor of flexible type	Type of Starting
1	Less than 3.7 KW	1. 1x1.5 Sq mm	Direct on line
2	3.7 KW	1x2.5 Sq mm	-do-
3	From 4.5KW to 5.5 KW	2x1.5 Sq mm	Star Delta
4	Above 5.5KW to 9.3 KW	2x2.5 Sq mm	-do-
5	Above 9.3KW to 11.0 KW	2x4.0 Sq mm	-do-
6	Above 11 KW to 16 KW	2x6.0 Sq mm	-do-
7	Above 16 KW to 22 KW	2x10 Sq mm	-do-
8	Above 22 KW and Less than 30 KW	1x16 Sq mm	ATS
9	From 30 KW and Less than 38.5 KW	1x25 Sq mm	-do-
10	From 38.5 KW and less than 48.5 KW	1x35 Sq mm	-do-
11	From 48.5 KW and above	1x50 Sq mm or size as per requirement.	-do-

.

5.3 In place of cable sizes 1x25 Sq mm & 1x35 Sq mm cable of 2x16 Sq mm can be provided as an alternative. Similarly in place of 1x50 sq mm, the cable of 2x25 Sq mm can be provided as an alternative. These two leads of lower sizes shall be provided in parallel and cores suitably connected to make the core leads with respect to ATS method of starting.

6.0 TESTING & INSPECTION

6.1 Testing of the pump sets shall be carried out as per relevant IS codes. The inspecting agency shall test & inspect the pump set as per enclosed Appendix"D". The tenderer should have all required facilities and shall get pumpsets tested & inspected in accordance with enclosed Appendix"D".

6.2 The manufacturer should have facilities for dynamic balancing at high speed, vacuum impregnation/air drying of rotors and stator, high tension electrical testing and pump performance testing. Details in this regard should be shown to the inspecting agency.

6.3 At the time of supply, the firm must submit with its invoice detailed test report on a finished pump set offered and reports of various tests conducted during manufacture.

7.0 MARKING: The marking shall be as per relevant IS code. The pump set shall invariably be marked with BIS standard mark. Purchasers mark `PHED RAJ.' & `Years of Supply' shall also be mentioned on each pump & motor.

NOTE: Wherever reference of IS number is given it may be treated as amended/ revised up to date at the time of inspection of supply/ replacement by inspection agency. Any amendment/ revision shall be effective only when it is implemented by BIS.

SPECIFICATIONS OF PVC SUBMERSIBLE CABLE

1.5Sq mm to 50Sqmm *(IS 694-1990) (Amended up to date)*

1. SCOPE

1.1 These specification cover the supply of ISI marked three core flexible flat PVC insulated and PVC Sheathed cable conforming to IS 694:1990 (amended up to date) to be used with the submersible pumping sets inside and outside water for working voltage up to and including 1100 volts. These cables are to be used as cables suitable for outdoor use having bunched plain high conductivity copper conductor conforming to IS: 8130-1984 (amended up to date) and insulated and sheathed with PVC compound conforming to IS; 5831-1984 (amended up to date).

2. MATERIAL OF CONSTRUCTION

2.1 COPPER CONDUCTOR

2.2 The bunched conductor shall be composed of plain annealed high conductivity copper wires complying with Class 5 of Copper Conductor as per IS 8130-1984 (amended up to date). The nominal max. diameter of wires and corresponding minimum number of wires in a strand and maximum allowable resistance shall be as follows:

S.No.	Size of cable in sq. mm	Maximum dia. & corresponding wires in a Core		Max. resistance of conductors at 20o centigrade (ohms/Km.)
		Maximum dia. in Mm	Minimum No. of wires in core	
1	1.5	0.26	29	13.30
2	2.5	0.26	47	7.98
3	4.0	0.31	53	4.95
4	6.0	0.31	80	3.30
5	10.0	0.41	76	1.91
6	16.0	0.41	122	1.21
7	25.0	0.41	190	0.78
8	35.0	0.41	266	0.554
9	50.0	0.41	379	0.386

NOTE: THE CROSS SECTIONAL AREA OF EVERY CORE SHOULD BE SAME AS PER PRESCRIBED SIZE OF CABLE (WHEN CALCULATED ON THE BASIS OF DIA OF EACH WIRE & NUMBER OF WIRES IN A CORE).

2.3 INSULATION & SHEATH

The insulation shall be of PVC compound conforming to the requirement type `A' of IS 5831:1984 (Specification for PVC insulation and sheath of electric cable) (amended up to date). The sheath shall be of PVC compound conforming to the requirement of type ST-I of IS: 5831-1984 (amended up to date). Cores shall be identified by different coloring of PVC insulation. Colour of cores shall be identified by Red, Yellow and Blue and the colour of sheath shall be Black only.

Three cores shall be laid side by side. Average thickness of insulation shall not be less than the nominal value (ti) mentioned below and the smallest of measured values of thickness of insulation shall not fall below the nominal value ti mentioned below by more than (0.1 mm + 0.1 ti).

The sheath where applicable, shall be applied by extrusion. It shall be applied over the laid up cores. It shall be so applied that it fits closely on the laid up cores and it shall be possible to remove it without damage to the insulation. The thickness of sheath determined by taking the average of a number of measurements, shall not be less than the nominal value (ts) specified below, and smallest of the measured values shall not fall below the nominal value(ts) specified below by more than 0.2mm + 0.2 ts.

S.No.	Size of cable (mm2)	Nominal thickness of insulation (mm) (ti)	Nominal thickness of sheath ts (mm)
1	1.5	0.6	0.9
2	2.5	0.7	1.0
3	4.0	0.8	1.1
4	6.0	0.8	1.1
5	10.0	1.0	1.2
6	16.0	1.0	1.3

7	25.0	1.2	1.5
8	35.0	1.2	1.6
9	50.0	1.4	1.7

3. TESTING

3.1 ACCEPTANCE TESTS

The following tests shall constitute acceptance tests:

S.No.	Test	Test method as per
(A)	Annealing Test (for copper)	Part No.1 of IS:10810
(B)	Conductor Resistance Test	Part No.5 of IS:10810
(C)	Test for thickness of insulation and sheath.	Part No. 6 of IS:10810
(D)	Tensile strength and elongation at break of insulation and sheath.	Part No. 7 of IS:10810
(E)	Insulation resistance test	Part No. 43 of IS:10810
(F)	High Voltage Test	Clause 16.3 of IS: 694 The cable shall withstand without breakdown an ac voltage of 3 kV (rms) or a dc voltage of 7.2 kV applied for a period of 5 minutes for each test connection.
(G)	Flammability test	Clause 16.5 of IS: 694 & Part No. 53 of IS: 10810 (The period of burning after removal of flame shall not exceed 60 seconds and the unaffected (uncharged) portion from the lower edge of the top clamp shall be at least 50mm).

3.2 ROUTINE TESTS

The following shall constitute routine tests;

a) Conductor resistance test, and
b) High voltage test.

4. TYPE TEST

The following tests shall constitute type tests:

S.No.	Type Test	For Requirements, Ref	Test Method
a)	Tests on		
	i) Annealing Test (for	IS 8130: 1984	As per Part 1 of IS: 10810
	ii) Resistance	IS 8130: 1984	As per Part 5 of IS: 10810
b)	Test for overall dimensions and thickness of	10, 13, 14 Table 1 to 5 of IS 8130: 1984	As per Part 6 of IS: 10810
c)	Physical test		
	i) Tensile strength and	IS 5831: 1984	As per Part 7 of IS: 10810
	ii) Loss of mass	IS 5831: 1984	As per Part No.10 of IS:10810
	iii) Ageing in air	IS 5831: 1984	As per Part No.11 of IS:10810
	iv) Shrinkage test	IS 5831: 1984	As per Part No.12 of IS:10810
	v) Heat Shock	IS 5831: 1984	As per Part No.14 of IS:10810
	vi) Hot	IS 5831: 1984	As per Part No.15 of IS:10810
d)	Insulation	IS 5831: 1984	As per Part No.43 of IS:10810

e)	High voltage test (Water immersion test)	16.2 of IS 694	As per Part No.45 of IS:10810 i) ac test The core(s) shall be carefully removed from a sample approximately 3 M long from the finished cable. They shall be so immersed in a water bath at 60 ± 3 degree C that their ends protrude at least 200mm above the water level. After 24 hours, a voltage of 3 kV (rms) shall be applied between conductors and water. This voltage shall be raised to 6 kV (rms) within 10 seconds and held constant at this value for 5 minutes. If the sample fails in this test, one more sample shall be subjected to this test, which should pass.
			ii) dc test
S.No.	Type Test	For Requirements, Ref	Test Method
			The cores which have passed the preliminary test mentioned above shall be subsequently tested with a dc voltage of 1.2 kV in the same water bath at the same temperature. The conductors shall be connected to the negative pole and water to the positive pole of dc supply by means of a copper electrode. The core shall withstand this dc voltage test for 240 hours without breakdown. The voltage shall be applied continuously, but if there are any unavoidable interruptions during the 4 hours period, that period shall be increased by the time of interruptions. The total of such interruptions shall not exceed 1 hour otherwise the test shall be started again.
f)	Flammability test	16.5 of IS 694	As per Part 53 of IS: 10810
g)	Cold bendtest diameter <= 12.5mm	IS 5831:1984	As per Part No.20 of IS:10810
h)	Cold impact test for diameter more than 12.5mm	IS 5831:1984	As per Part No.21 of IS:10810
i)	Additional ageing test	16.6 of IS 694	Ageing of Sample A sample, 6 mtrs. long of the finished cable shall be suspended in a heating chamber and exposed to a temperature of 80 ± 2 degree C during a period of 168 hours. Immediately after this, the sample shall be placed in a bath of boiling water for a period of 8 hours and in a water bath at 25o C for 16 hours. This procedure shall be repeated on 5 successive days. The ends of the sample shall protrude at least 200mm above the water level.

5. The inspection including stage inspection and testing of the material shall be got done by the inspecting agency at the works of manufacturer. All acceptance test mentioned above shall be conducted by inspecting agency.

5. SAMPLING OF CABLES:

A) LOT

In any consignment the cables of the same size and type manufactured under essentially similar conditions of production shall be grouped together to constitute a lot.

B) SCALE OF SAMPLING

Samples shall be taken and tested from each lot for ascertaining the conformity of the lot to the requirements of the specification. The number of samples to be selected shall depend on column 2 & 3 of following table. These samples shall be taken at random:

S.No.	Number of drums in lot	Number of drums to be taken as sample	Permissible number of defectives
1	2	3	4
1	Upto 25	3	0

2	26 to 50	5	0
3	51 to 100	8	0
4	101 to 300	13	1
5	301 & above	20	1

C) In order to ensure the randomness of selection, procedure given in IS 4905:1968 may be followed.

D) NUMBER OF TESTS AND CRITERION FOR CONFORMITY:

From each of the drum selected according to column 2 & 3 of above table, suitable lengths of test samples shall be taken. These tests samples shall be subjected to each of the acceptance tests. A test sample is called defective if it fails in any one of the acceptance tests. If the number of defectives is less than or equal to the corresponding permissible number given in column 4 of above table, the lot shall be declared as confirming to the requirements of the acceptance tests; otherwise not.

6. PACKING AND MARKING

6.1 The cable shall be supplied in non-returnable wooden drums with adequate barrel diameter and shall be packed in such a manner that it shall be protected from injury and damages during transit. Not more than one length shall be wounded on one drum.

6.2 The cable shall carry following information stenciled on the drum and contained in label attached to it:

a) Reference to IS 94
b) Manufacturer's Name, Brand Name of trade mark.
c) Type of Cable and Voltage grade.
d) Number of Cores.
e) Nominal core sectional area of conductor.
f) Length of Cable.
g) Cable code (yy)
h) Direction of rotation of drum (By means of arrow)
i) Years of Manufacture.
j) Approximate gross weight.
k) No. of wire in a core

Schedule - I

No material shall be supplied by JDA

Specification of G.I. Pipes

1. Scope:

This includes manufacture & Supply of galvanized mild steel Tubes Sockets (Medium Class) to be used for Water wells and other miscellaneous purposes conforming to IS: 1329-1990 (amended up to date) in nominal bore of pipes of 32mm. The pipes should be ISI marked.

2. Material:

General requirements relating to supply of Mild steel Tubes shall confirm to IS: 1387-1967. The welded tubes shall be manufactured from hot rolled steel skeip/strip confirming to Grade-I ass per IS: 10748-1984 (amended up to date).

The tube shell be Electric Resistance welded (ERW). The height of the internal weld fin shall not be greater the 60% of the specified thickness.

The chemical analysis of steel tubes shall be carried out only for sulphur & phosphorous requirement. The Sulphur & phosphorus requirements shall not exceed 0.05 percent each with maximum permissible variation of 0.005 percent each. The analysis shall be carried out as per IS: 228.

The sockets shall be electric resistance welded and should meet the requirement of IS: 1239 (Part-2) 1992 (amended up to date). However socket for 32mm pipe shall manufactured from seamless pipe & it shall be not dipped galvanized.

3. Dimension and Masses:

Dimensions and masses of steel Tubes shall be as follows:

Nominal Bore (mm)	Out side Diameter		Thickness (mm)	Mass of screwed & socketed type kg/m	Minimum out side diameter of socket (mm)	Minimum length of socket (mm)
	Maximum (mm)	Minimum (mm)				
32	42.9	42.0	3.2	3.13	49.0	51.0
50	60.8	59.7	3.6	5.10	68.0	60.0

4. Length of Pipe:

The G.I. pipes of 32mm/50mm nominal bore with socket (as per clause 3.4 above) shall be supplied in 3 M. length.

The length of tube shall be measured as inclusive of socket on one end with handling tight. Handling tight means that the socket is so tight fitted that it should not fall down during handling on transit.

5. galvanising:

The Zinc coating on the tube shall be in accordance with IS: 4736-1986. The tubes shall be galvanized before screwing .

6. Tolerance on Thickness mass & length:

The tolerance shall be permitted as per clause 9 and 11 of IS: 1239 (Part-II) 1990. However tolerance in length of 32mm pipe shall + 0-mm-25-mm.

7. Finish:

All pipes shall be clearly finished and reasonably free from injurious defects. The ends shall be cleanly cut and reasonably square. The tubes shall be reasonably straight.

1. Protection And Packing:

The protection and packing shall be done as per provision of relevant IS:

2. Inspection

All material shall be inspected by the concerned Executive Engineer. Material shall be supplied in Divisional Store for checking and then issued for execution.

Note: Wherever there is reference of Indian Standard it shall be considered amended up to date at the time of inspection of Supply/replacement by inspecting agency. Any amendment shall be effective only when it is implemented by B.I.S. All the material shall be ISI marked.

All dimensions shall be referred from updated relevant IS Code.

Providing HDPE Pipes & Specials

HDPE PIPES

HDPE Pipes

The HDPE (High density polyethylene) pipes (for water supply) confirming to IS 4984-1995 and duly marked with certification of BIS shall only be supplied. The pipe shall confirm to the test requirements prescribed in IS 4984-1995. The minimum factory test pressure for hydraulic test shall be 2 times the rated pressure of pipe for 60 seconds. No defect/ leakage/ cracks should be visible after hydraulic test.

Colour

The colour of pipe shall be black. Each pipe shall contain minimum three equispaced longitudinal stripes of width 3mm in blue colour. These strips shall be co-extruded during pipe manufacturing and shall not be more than 0.2mm depth. The material of the stripes shall be same type of resin, as used in the base compound for the pipe.

Material

The raw material used for the manufacture of pipes should not constitute toxic hazard, should not support microbial growth and should not give rise to unpleasant taste or odor, clouding or discoloration of water.

The pipes shall be manufactured from 100% virgin PE-80 High density polyethylene (HDPE) food grade raw material with minimum required strength of 8MPa (PE-80). The raw material should be of food grade quality. The nominal pressure of pipes required shall be as specified in the scope of work. The pipe material shall be suitable for conveyance of drinking water for which the certificate of recognized institute shall be provided.

High density polyethylene (HDPE) used for the manufacture of pipes shall confirm the designation PEEWA-45-T-003 or PEEWA-45-T-006 or PEEWA-50-T-003 or PEEWA-50-T-006 or PEEWA-57-T-003 or PEEWA-57-T-006 of IS: 7238/1992. In addition the material shall also confirm to $5.6.2 of IS 7328-1992.

The specific base density shall be between 940.0 Kg/Cum and 958.4 Kg/Cum (both inclusive) when determined at 27 C according to procedure prescribed in Annexure “A” of IS: 7328/1992. The value of the density shall not differ from the nominal value by more than 3 kg/cum as per $ 5.2.1.1 of IS 7328-1992.

The MFR (Melt Flow Rate) of the material shall be between 0.20g/10min and 1.10g/10min (both inclusive) when tested at 190 degree C with nominal load of 5 Kgf when determined by the method prescribed in $ 7 of IS: 2530-1963. The MFR of the material shall be within +/- 20% of the value declared by the manufacturer.

The resin shall be compounded with Carbon black. The Carbon Black content in the material shall be within 2.5 + 0.5% and dispersion of Carbon black shall be satisfactory when tested according to the procedure prescribed in IS: 2530-1963.

With the advancement in technology natural (unpigmented) resin designation PEEWA-45-T-003 or PEEWA-45-T-006 or PEEWA-50-T-003 or PEEWA-50-T-006 or PEEWA-57-T-003 or PEEWA-57-T-006 of IS: 7238/1992 duly stabilized with anti-oxidants may be compounded with suitable black master batch or processed directly after physical mixing with suitable black master batch in the pipe extruder for production of pipes, which shall confirm to the performance requirements of the pipe as specified in IS 4984. The material of pipe thus produced shall confirm to the requirements of $ 5.2 of IS 4984-1995.

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 harmless and shall be selected from the list given IS: 10141-1982.

No reworked or recycled material shall be used.

Dimensions

The outside diameter of pipes, tolerance on the same and ovality of pipes, and minimum and maximum wall thickness shall be confirming to IS 4984-1995. The length of straight pipe shall be 5 to 20m. However wherever specifically required under the conditions of contract, the pipes shall be supplied in coils.

Visual appearance

The internal and external surfaces of pipes shall be smooth, clean and free from grooving and other defects. The ends of the pipes shall be cleanly cut square with the axis to within the tolerances given in IS 4984 and free from deformity. Slight shallow longitudinal grooves or irregularities in the wall thickness shall be permissible provided that the wall thickness remains within the permissible limits.

Inspection and Testing of HDPE Pipes

The HDPE pipes supplied by the contractor shall be subjected to following tests as per IS 4984 for acceptance:

- Visual and dimensional check as per IS 4984

- Hydraulic characteristics/ Internal pressure creep rupture test as per IS 4984
- Longitudinal reversion test as per IS 4984
- Overall Migration test
- Density test
- Melt flow rate test
- Carbon black content and Dispersion test
- Any other test required as per provisions to which supplied pipes confirms i.e. (IS 8329)
- Hydraulic test at manufacturer premises before dispatch.

In addition the following are required for review by inspection authority:

- The test reports of raw material.
- The type test report of pipe. This shall not be more than two years old from the date of inspection of pipes.
- Notch Impact test as per ASTM-1474. HDPE pipes when tested as per ASTH-1474 (Notch Impact Test) should pass the Hydraulic test as per 1S:4984:1995 for a minimum 165 Hrs. This test can be carried out at factory or at some private laboratory. Such report should not be more than 2 Month old from date of inspection.

The sampling method for testing shall be as per the provisions of the standards to which they are manufactured.
The pipes shall also be got tested from CIPET and amount for testing shall be borne by contractor. Department shall demand for manufacturers' test report for pipes along with pre dispatch inspection by EIC or his authorized representative.

Marking

All pipes shall be marked as per the provisions of IS 4984 and subjected to following minimum requirements:
Manufacturer name/ Trade mark,
Designation of pipe,
Lot number/ Batch number,
Manufacturing standard to which the pipe confirms (IS 4984) and BIS certification mark,
Mark of pre-dispatch Inspecting authority.

TRANSPORTATION / STORAGE OF PIPES AND SPECIALS:

The Contractor has to transport the pipes and other materials from manufacturer to the site stores and from the site stores to the site of laying as per the instructions given by the Engineer in Charge. Pipes should be handled with care to avoid damage to the surface and the socket and spigot ends, deformation or bending. Pipes shall not be dragged along the ground or the loading bed of a vehicle. Pipes shall be transported on flat bed vehicles/trailers. The bed shall be smooth and free from any sharp objects. The pipes shall rests uniformly on the vehicle bed in their entire length during transportation. Pipes shall be loaded and un-loaded manually or by suitable mechanical means without causing any damage to the stacked pipes.
The transportation and handling of DI pipes shall be made as per IS 12288. All precautions set out shall be taken to prevent damage to the protective coating, damage of the jointing surfaces or the ends of the pipes.
Whatever method and means of transportation is used, it is essential that the pipes are carefully placed and firmly secured against uncontrolled movement during transportation to the satisfaction of engineer in charge.
Damage to lining must be repaired, as per relevant IS code, before pipe laying according to the instructions of the pipe manufacturer after taking approval of EiC. Pipes shall not be thrown directly on the ground or inside the trench.
When using mechanical handling equipment, it is necessary to employ sufficient personnel to carry out the operation efficiently with safety. The pipes should be lifted smoothly without any jerking motion and pipe movement should be controlled by the use of guide ropes in order to prevent damage caused by pipes bumping together or against surrounding objects.
Rolling or dragging pipes along the ground or over other pipes already stacked shall be avoided.
The pipe should be given adequate support at all times. Pipe should be stored on a reasonably flat surface free from stones and sharp projections so that the pipe is supported through out its length. In storage, pipe racks should provide continuous support and sharp corners of metal racks should be avoided. Pipes should not be stacked in large piles for all pipes. Socket and Spigoted pipes should be stacked in layer with sockets placed in alternate ends of the stack to avoid lop sided stacks.
Pipes should not be stored inside another pipe. On no account the pipes should be stored in stressed or bent condition or near the sources of heat. Pipes should not be stacked more than 1.5 m high and pipes of different sizes and classes should be stacked separately. The ends of the pipes should be protected from abrasion. The pipes should be protected from U.V. rays and excessive heat at all times. Their storage facility should be well ventilated.
The Contractor shall provide proper and adequate storage facilities to protect all the materials and equipments against damage from any cause whatsoever and in case of any such damage/theft, the Contractor shall be held responsible.

The contractor will lay the pipelines along the alignments as per the approved L section. layout shall be given by the Engineer in Charge of his authorized representative.

The layout shall be given keeping in view the information available regarding existing services like water lines, sewers, telephone and electric lines/ cables. In the event some services fall in the alignment of lines to be laid, the contractor shall have to shift the alignment or such services. The contractor shall take all due care to avoid damage to any such services and, in case of any damage occurring to them in progressing the work, the Contractor shall make good the same at his own cost. No additional time and payment shall be allowed on this account.Rubber rings shall be handled and stored in their original packing, protected against sunlight and contacts with petroleum product, solvents and paints. The Contractor shall provide suitable lifting equipment for loading, unloading and laying of the pipes.

Specials for HDPE Pipes

Unless otherwise specified, the specials and the jointing material for HDPE pipes shall be Fusion fittings confirming to GBE/PL2:PART 4. Fusion fittings with integral heating element shall be used in general. All fittings shall be of Class B. Fittings shall be produced from material class PE 80 or PE 100. The fittings shall be free from cracks, voids, blisters, holes, distortion, dents, injurious incisions, inclusions or any other likely to impair their performance. For each fitting the fusion time shall be the same.

Laying and Jointing of Pipeline

Trench Excavation

The trench excavation of pipeline shall be in accordance with IS 7634 for HDPE pipes,. Pipe trenches shall be excavated to the lines and levels shown on the drawings or as directed by the Engineer in charge. The depth of the excavated trench shall be as specified in drawing or as directed by the Engineer in charge. The pipe shall not be laid in a trench, until the section of trench, in which the pipe is to be laid, has been approved by the Engineer in charge. The average cover should not be less than 900mm above pipe and in no case be less than 600mm when laid underground.

The bottom of the trench shall be trimmed and leveled to permit even bedding of the pipes. It should be free from all extraneous matter, which may damage the pipe coating Additional excavation shall be made at the joints of the pipes, so that the pipe is supported along its entire length.

All excavated material shall be stacked in such a distance from the trench edge, so that it will not endanger the work or workmen and it will avoid obstructing footpaths, roads and driveway. Hydrant, surface boxes, fire or other utility controls shall be dept unobstructed and accessible during the construction work and be kept clear or other satisfactory provisions made for street drainage, Natural water-courses shall not be obstructed.

To protect persons from injury and damage to property, adequate barricades, construction signs torches, red lanterns and guards, as required, shall be placed and maintained during the progress of the work and until it is safe for traffic to use the roadways.

All materials, pipes equipment and pipes which may serve as obstruction to traffic, shall be enclose by fences or barricades and shall be protected by illuminating proper lights when the visibility is poor.

As far as possible, the pipeline shall be laid below existing services, like water and gas pipes, cable ducts and drains but not below sewer, which are usually laid at greater depth. Where it is unavoidable, pipeline should be suitably protected. A minimum clearance of 150mm shall be provided between the pipeline and such other services.

Tree, shrubbery, fences, poles and all other property and surface structures shall be protected. Tree roots shall be cut within a distance of 50 cm from pipe joints in order to prevent roots from entering them. Temporary support, adequate protection and maintenance of all underground and surface structures, drains, sewers and other obstructions encountered in the progress of the work shall be provided. The structures, which will be disturbed, shall be restored after completion of the work.

Where water accumulates in any trench the contractor shall maintain the trench free of water during pipe laying.

Wherever necessary to prevent caving, trench excavation in soils such as sand, gravel and sandy soil shall be adequately sheeted and braced. Where sheeting and bracing are used, the net trench width after sheeting shall not be less than that specified above. The sides of the excavation under shall be adequately supported at all time and except where described as permitted under the contract, shall be not battered.

The Engineer in charge in co-operation with the contractor shall decide about the sheeting/ bracing of the trench according to the soil conditions in a particular stretch and taking into account the safety requirements of contractor's and PHED staff.

Excavation for Laying Pipe Line along the road

While laying the pipeline below ground along the roadside, the contractor shall observe the following:

The contractor shall not be allowed to take earth from the burrow pits if excavation required to take additional earth.

If invert of pipe is kept above the existing burrow pit level or part of pipe is above it, the minimum side slopes of 1:1 shall be provided on the side towards the burrow pit area so as to provide required cover. The side slopes shall be properly compacted.

If earth is taken for providing required cover to pipe from the burrow pits, the burrow pits shall be so graded that no impounding of water is possible in burrow pit area.

If the pipeline is laid just near the road section, as far as practical, minimum cover of 1.00 meter shall be used. Whenever this requirement of cover cannot be ensured, pipeline shall be covered with properly designed pre-cast concrete slab.

Dewatering

Though the site for laying of pipe line does not requires any dewatering (except within City campus where the starting Pumping Station exist.) but if any dewatering is required to complete the work than it will be the responsibility of the contractor.

Fencing, Watching and Lighting

The posts of the fencing shall be of timber, securely fixed in the ground not more than 2.5 m. apart. They shall not be less than 10 cm in dia. or not less than 1.25 m above the surface of ground. There shall be two rails, one near the top of the posts and the other about 0.5 m above the ground and each shall be of 5 cm to 10 cm in dia. and sufficiently long to run from post to post which they shall be bound with strong ropes. The method, of projecting rails beyond the posts and tying together where they meet will not be allowed on any account. All along the edges of the excavated trenches, a bund of earth about one meter high shall be formed where so required by the Engineer-in-Charge for further protection. Proper provision shall be made for lighting at night and watchman shall be kept to see that this is properly done and maintained. In addition to the normal lighting arrangements, the contractors shall provide wherever such work is in progress, battery operated blinking light (6 volts) in the beginning and end of a trench with a view to provide suitable indication to the vehicular traffic. The contractor shall provide and display special boards printed with fluorescent paints indicating the progress of the work along the road. The contractor shall be held responsible for payment of all claims for compensation as a result of accident or injury to any person or property due to improper fencing, inadequate lighting or non-provision of red flags. The contractors shall at their own cost provide all notice boards before opening of roads as directed by the Engineer-in-Charge. The contractor shall make arrangements to direct traffic whenever work in through fare is in progress.

Trench Excavation to Commensurate with the laying progress

The work of trench excavation should not be dug in advance for a length greater than 500m ahead of work of laying and jointing of pipeline unless otherwise defined by the Engineer in charge. 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 laying of the pipes has to be prepared according to the L-section immediately before laying of the pipe.

Bedding of The pipes

The trench bottom should be even and smooth so as to provide a proper support for the pipe over its entire length, and shall be free from stones, lumps, roots and other hard objects that may injure the pipe or coating. Holes shall be dug in the trench bottom to accommodate sockets couplings so as to ensure continues contract between the trench and entire pipe barrel between socket holes.

Storage of HDPE pipes

Black polythene pipes may be stored either under cover or in the open. Coils may be stored on edge or stacked flat one on top of the other but in either case they should not be allowed to come into contact with hot water or steam pipes and should be kept away from hot surface. Straight lengths should be stored on horizontal racks giving continuous support to prevent the pipe taking on a permanent set. Storage of pipes in heating areas exceeding 270C should be avoided. If due to unsatisfactory storage or handling, a pipe is damaged or kinked, the damaged portion should be cut out completely.

Transportation and Handling of Pipes and Specials

The contractor has to transport the pipes and jointing material from the site of unloading to the site of laying as indicated by the Engineer in charge. Pipes should be handled with care to avoid damage to the surface and the socket and spigot ends, deformation or bending. Pipes should not be dragged along ground or the loading bed of vehicle. Pipes shall be transported on flat bed vehicle/ trailers. The bed shall be smooth and free from any sharp object. The pipes shall be loaded in such a way that they are secured and no movement should take place on the vehicle during transit. Pipes shall be loaded and unloaded manually or by suitable mechanical means/ cranes from the site of unloading without causing any damage to the stacked pipes. The pipes shall be lifted smoothly without jerking motion and pipe movement should be controlled by use of guide ropes. Handling shall be careful to avoid any damage to pipe or inner mortar lining of DI pipes. The lifting hooks if used shall be broad enough and pipe ends should be protected by rubber or similar material in order to avoid damage to the pipe ends.

Rolling or dragging pipes along the ground or over other pipes shall also be avoided.

The pipes shall be laid out properly along the proposed alignment in a manner that they do not create any significant hindrance to the public or traffic and that they are not damaged on this account.
Stringing of the pipes end to end along the working width should be done in such a manner that the least interference is caused in the land crossed. Gaps should be left at intervals to permit the passing of equipment across the working area. Pipes shall be laid out such that they remain safe where placed and that no damage can occur to the pipes. If necessary, pipes shall be wedged to prevent accidental movement. Precautions shall be made to prevent excessive soil, mud etc. entering the pipe.
The joint gasket shall be kept in wooden boxes or their original packing and stored in cool conditions and not exposed to direct sunlight. Gaskets must not be deformed. They shall be taken out only shortly before they are needed.

Laying and Jointing of Pipes

HDPE pipes as per IS 7634; however the specific references given herein shall prevail on the provisions of the standards. Pipes should be lowered in the trench with tackle suitable for the weight of pipes. For smaller sizes up to 200mm nominal bore, the pipe may be lowered by the use of ropes.
The pipes and specials shall be inspected and defects noticed if any such as hair cracks, broken ends or damages etc. shall have to be removed/ rectified by contractor. Ends of pipes and specials shall have to be made good as and when required before laying and jointing. The pipes shall be cleaned in whole length with special care of the spigot and sockets/ other ends on the inside/outside to ensure that they are free from dirt and unwanted projections.
The whole pipe shall be placed in position singly and shall be true to profile and direction of slope indicated. The pipes shall be laid without deflection in a straight line between bends and between high and low points. Vertical and horizontal deflections between individual pipes shall be not more than the permissible limits.
The pipes shall rest continuously on bottom of the trench and not on lumps of earth or on the joints. Before pipes are jointed they shall be thoroughly cleaned of all earth lumps, stones, or any other objects that may have entered the interior of pipes, particularly the spigot end and the socket including the groove for the rubber gasket. End caps are removed just before laying and jointing. The pipes and specials shall be laid accordingly to the instructions of manufacturer and using the tools recommended by them.
Where gradient of the bed slopes is more than 15 degrees, it may be necessary to anchor pipes against their sliding downwards, by providing suitable gradient blocks and straps.
All specials like bends, tees etc. and appurtenances like sluice or reflux valves etc. shall be laid in synchronization with the pipes. The contractor has to ensure that the specials and accessories are ready in time to be installed together with the pipes.
At the end of each working day and whenever work is interrupted for any period of time, the free ends of laid pipes shall be protected against the entry of dirt or other foreign matter by means of approved plugs or end caps.
No pipe shall be laid in wet trench conditions that preclude proper bedding, or when, in the opinion of the Engineer in charge, the trench conditions of the weather are unsuitable for proper installation.
Cutting of pipes shall be reduced to minimum required. The cutting of DI pipe for inserting valves, fittings etc. shall be done in a neat and workman like manner without damage to the pipe or lining so as to leave a smooth end at right angles to the axis of the pipe. Cutting shall be done by Hacksaw or Wheel cutter or pipe cutting machine according to the recommendations of manufacturer.
Suitably designed anchorage shall be provided at changes in direction and at dead ends to resist the static thrusts developed by internal pressure.
No pipe shall be laid in the wet trench conditions that preclude proper bedding, or when in the opinion of Engineer In-charge, the trench conditions or weather are unsuitable for proper installation.

laying underground

All construction debris should be cleaned from the inside of the pipe either before or just after a joint is made. This is done by passing a pull through in the pipe or by hand depending upon the size of pipe.
On gradient of 1:15 or steeper, precautions shall be taken to ensure that the spigot of pipe being laid does not move into or out of the socket of the laid pipe during the jointing operations. As soon as the joint assembly has been completed, the pipe should be held firmly in position while the trench is backfilled over the barrel of the pipe. The backfill should be well compacted.
The socket and spigot ends/ other ends of the pipes shall be brushed and cleaned. The chamfered surface and the end of the spigot end have to be coated with a suitable lubricant recommended by the manufacturer of the pipes. Oil, petroleum bound oils, grease or other material which may damage the rubber gasket shall not be used as lubricant. The rubber gasket shall be inserted into the cleaned groove of the socket. It has to be checked for correct positioning.
The two pipes shall be aligned properly in the pipe trench and the spigot end shall be pushed axially into the socket either manually or with a suitable tool specially designed for the assembly of pipes and as recommended by the

manufacturer. The spigot has to be inserted up to the insertion mark on the pipe spigot. After insertion the correct position of the socket has to be tested with a feeler blade.

The HDPE pipes shall be laid shall be laid with butt fusion welding as per IS 7634-1975. The pipe shall be cut square and the face of the pipe shall be slightly scrapped prior to welding to remove oxidized layer. At the time of welding, leveling of the pipes is essential particularly in case of larger diameter pipes. Welding temperature should be 2000C and surfaces of heating mirror (Metallic plate heated up by electrical coil or by blow torch) should be 2100+/- 50C. The welding of pipe should be held in either side of the heating mirror with only contact pressure of about 20KPa. When the rim of molten material is found, the pipes are removed from the heating mirror and immediately the joint shall be made by application of moderate pressure of approximately 100 to 200KPa for 2-3 seconds. The initial heating time for achieving molten rim, varies from 1 to 5 minutes depending upon the pipe wall thickness and size. It is essential to see that the rim formed is not excessive and the mirror should be kept exactly around 2100C.

Laying above Ground

The ground should be dressed to match the curvature of the pipe shell for an arc length subtending an angle of 120 degree at the center of pipes. Alternatively the pipeline shall be laid either on saddle, roller or rocker supports. The pipeline may be allowed to rest on ground if soil is non-aggressive. The above ground installations of spigot and socket pipes are provided with one support per pipe, the support being positioned behind the socket of each pipe.

Backfilling of the pipe trench

All excavation shall be backfilled to the level of the original ground surfaces unless otherwise shown on the drawing or ordered by the Engineer 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, 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 backfill material shall be free from cinders, ashes, slag, refuse, rubbish, vegetable or organic material, lumpy and frozen material, boulders, rocks or stone or other material, which in the opinion of Engineer in-charge, is unsuitable or deleterious. Backfilling shall be done in layers not exceeding 15 cm in thickness after compacting, watering and compacted to a density not less than 90 percent of the maximum dry density at optimum content of the surrounding material.

Trenches crossing a road shall be backfill with selected material. Any deficiency in the quantity of material for backfilling the trenches shall be supplied by the contractor.

The contractor shall at his own expense make good any settlement of the trench back fill occurring after backfilling and until the expiry of the defect 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 of refuse or unsuitable soil.

Testing of Pipeline

Sectional Tests

Hydraulic testing is the ultimate check about the overall workmanship of the pipeline and therefore the pipeline system shall be hydraulically tested to the satisfaction of Engineer in charge. After laying and jointing, the pipeline shall be tested for tightness of barrel and joints, and stability of thrust blocks in sections approved by the Engineer in charge. The length of sections depends on topographical conditions. Preferably the pipeline stretches to be tested shall be between two valve chambers (air valve, sluice valve, scour valve etc.).

The water required for testing shall be arranged by the contractor himself. The contractor shall fill the pipe and compensate the leakage 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. Generally the following steps are required which shall be monitored and recorded in test protocol if required.

- Complete setting of the thrust blocks.
- Partial backfilling and compaction to hold the pipes in position while leaving the joints exposed for leakage control.
- Opening of all intermediate valves (if any)
- Fixing the end pieces for tests and after temporarily anchoring them against the soil (not against the preceding pipe stretch.

- At the lower end with a precision pressure gauge and the connection to the pump for establishing the test pressure.
- At the higher end with a valve for air outlet.
- If the pressure gauge cannot be installed at the lowest point of the pipeline, an allowance in the test pressure to be read at the position of Gauge has to be made accordingly.

- The pipeline to be tested shall be filled with water manually or by a low-pressure pump from lowest point(s).
- The water for this purpose shall be reasonably clear and free of solids and suspended matter.
- Complete removal of air through air valves along the line.
- Closing all air valves and scour valves.
- Slowly raising the pressure to the test pressure @ nearly 1 Kg. per Cm2 per minute while inspecting the thrust blocks and the temporary anchoring.
- Keeping the pipeline under pressure for the duration of the pre-test/ saturation of the lining by adding make-up water to maintain the pressure at the desired test level. Make-up water to be arranged by contractor himself at his/ own cost.
- Start the test by maintaining the test pressure at the desired level by adding more make up water, record the water added and the pressure in intervals of 15 minute at the beginning and 30 minutes at the end of the test period.
- If a drop in pressure occurs, the quantity of water added in order to re-establish the test pressure should be carefully measured. This should not exceed 0.1 liter per mm of pipe dia per km of pipeline per day for each 30 m head of pressure applied.
- The field-testing pressures of HDPE pipelines and duration of test shall be as follows:

Field Test pressure	Test duration
1.5 times rated pressure of pipe	6 Hours

- The acceptance criteria for HDPE pipes shall be that the pressure test pressure should be maintained for test duration.

- No section of the pipe work shall be accepted by the Engineer in Charge until all requirements of the test have been obtained.
- On completion of a satisfactory test any temporary anchor blocks shall be broken out and stop ends removed. Backfilling of pipe trench shall be completed.
- Failure to pass the test
- All pipes or joints, which are proved to be in any way defective shall be replaced or remade and re-tested as often as may be necessary until a satisfactory test shall have been obtained. Any work, which fails or is proved by test to the unsatisfactory in any way, shall be redone by the contractor.

SPECIFICATIONS FOR P/L/J AND SECTIONAL TESTING OF PIPELINES

General

The contractor will inspect the route along which the pipe line is proposed to be laid. Efforts shall be made by the contractor to make minor deviations from the marked alignment so as to keep the pipe alignment as straight as possible and to avoid damage of public and private properties along the alignment. The alignment of pipe line and location of specials & chambers may be changed at site in co- ordination and with prior approval of the Engineer In Charge. The final alignment on which the pipeline shall be laid shall be marked in field and got approved from the Engineer in Charge or his representative. Where ever there is need for deviation, it should be done with the use of necessary specials or by deflection in pipe joints (limited to 75% of permissible deflection as per relevant standards). The alignment as proposed should be marked on ground with a line of white chalk and got approved from Engineer In-Charge. The position of fittings, valves, shall be as per directions of engineer-in-charge.

The quality of pipes, inner mortar lining and the quality of laying shall ensure that the considered co-efficient of friction of value (Cr=1) is obtained during the designed period, so that the design is validated and the designed quantities of flow can be delivered. Thus the contractor shall ensure that the conditions of pipes its lining and the laying are perfect in all respect.

Standards

Except otherwise specified in this technical specification, the Indian Standards and Codes of Practice in their latest version, National Building code, PWD specification of the state of Rajasthan and Manual of

water supply of GOI shall be adhered to for the supply, handling, laying, installation, and site testing of all material and works. The laying of pipeline shall be done in confirmations to the following standards:

.**Alignment and the L-Sections**

The slopes provided shall be such that in existing ground level conditions, the maximum cover over the laid pipe is neither more than 1.5 m nor less than 0.9 m, if the pipe is to be laid above ground. The average cover generally should not be less than 0.9 meters. In case of HDPE pipes, the pipes shall have a minimum cover of 900 mm when laid under roads with light traffic or under cultivated soils and 1.25 m when laid under roads with heavy traffic. When the soil has poor bearing capacity and is subject to heavy traffic, the pipes shall be laid on a concrete cradle.

PROVIDING, LAYING, JOINTING, TESTING & COMMISSIONING OF PIPE LINES AND RELATED CIVIL WORKS.

Providing, Laying, Jointing, testing & commissioning of pipe lines as mentioned in scope of work Supply and testing at works, transportation, packing all type of specials, valves and other materials to be used. Stacking and/or storage of material, re-handling as per specifications, and carry out sectional testing, pre-commissioning checks, full completion test and trial runs.

Laying and Jointing of above mentioned pipe lines as per specifications mentioned in relevant IS code and water supply manual published by CPHEEO. The pipeline alignment in general shall be as per enclosed copy of drawing, however exact alignment shall be as per the directions of Engineer in charge. The alignment approved by the Engineer-In-Charge shall be final and binding to the contractor.

Providing, testing and installing all materials such as bends, tees, reducers, dismantling joints, insulating joints, transition joints, rubber rings, flanges, nuts & bolts, rubber sheets etc. of required specifications for the installations. All specials shall be of DI/ CI / Mild steel as per the requirements of site conditions desired at the point of installation as per hydraulic considerations & as per the directions of Engineer in charge.

All material required for complete project shall be arranged by contractor himself. No material shall be provided by the department. However department may choose to provide DI pipe for rising mains and distribution system. If so no payment shall be made to contractor on account of providing pipe lines.

Sizes and numbers of valves are tentative and may vary as per the directions of Engineer in charge during execution. The Air valve shall be provided at all convexities of L-Section but an average distance not exceeding 750m. The pressure rating of valves shall be as per the design pressure at the point of installation. The locations of sectionalizing valves shall be as per site conditions and shall be got approved from Engineer-In-Charge.

Providing thrust blocks at horizontal bends wherever required or at locations given by Engineer in Charge for the combination of loads as per site conditions. The permissible deflection in each pipe length shall be as per the provisions of relevant standards.

Providing a dismantling pipe with flexible joints or dismantling joint with each valve for easy maintenance.

Any damage caused while laying, testing, and commissioning or during execution to the private properties or any other structure etc. shall be got repaired by the contractor at no additional cost to the department.

Completion and Commissioning of the pipelines.

Removal of defects during defect liability period after successful completion of work.

Section A-5

Annexure

Annexure A :

Compliance with the code of Integrity and No Conflict of Interest

Any person participating in a procurement process shall –

(a) Not offer any bribe, reward or gift or any material benefit either directly or indirectly in exchange for an unfair advantage in procurement process or to otherwise influence the procurement process;
(b) Not misrepresent or omit the misleads or attempts to mislead so as to obtain a financial or other benefit or avoid an obligation;
(c) Not indulge in any collusion, Bid rigging or anti-competitive behavior to impair the transparency, fairness and progress of the procurement process;
(d) Not misuse any information shared between the procuring Entity and the Bidders with an intent to gain unfair advantage in the procurement process;
(e) Not indulge in any coercion including impairing or harming or threatening to do the same, directly or indirectly, to any party or to its property to influence the procurement process;
(f) Not obstruct any investigation or audit of a procurement process;
(g) Disclose conflict of interest, if any; and
(h) Disclose any previous transgressions with any Entity in India or any other country during the last three years or any debarment by any other procuring entity.

Conflict of Interest :-

The Bidder participating in a bidding process must not have a Conflict of interest.
A conflict of interest is considered to be a situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations.
i. A Bidder may be considered to be in Conflict of Interest with one or more parties in a bidding process if, including but not limited to:

a. Have controlling partners/shareholders in common ; or
b. Receive or have received any direct or indirect subsidy from any of them; or
c. Have the same legal representative for purposes of the Bid; or
d. Have a relationship with each other; directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or influence the decisions of the Procuring Entity regarding the bidding process; or
e. The Bidder participates in more than one Bid in a bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which the Bidder is involved. However, this does not limit the inclusion of the same subcontractor, not otherwise participating as a Bidder, in more than one Bid; or
f. The Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Goods, Works or Services that are the subject of the Bid; or
g. Bidder or any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as engineer-in-charge/ consultant for the contract.

Annexure B :

Declaration by the Bidder regarding Qualifications

Declaration by the Bidder

In relation to my/our Bid submitted to …….. for procurement of …….. in response to their Notice inviting Bids No. ……..Dated …….. I/We hereby declare under Section 7 of Rajasthan Transparency in Public Procurement Act, 2012, that :

1. I/We possess the necessary professional, technical, financial and managerial resources and competence required by the Bidding Document issued by the Procuring Entity;
2. I/We have fulfilled my/our obligation to pay such of the taxes payable to the Union and the State Government or any local authority as specified in the Bidding Document;
3. I/We are not insolvent, in receivership, bankrupt or being wound up, not have my/our affairs administered by a court or a judicial officer, not have my/our business activities suspended ant not the subject of legal proceeding for any of the foregoing reasons;
4. I/We do not have, and our directors and officers not have, been convicted of any criminal offence related to my/our professional conduct or the making of false statements or misrepresentations as to my/our qualifications to enter into a procurement Contract within a period of three years preceding the commencement of this procurement process, or not have been otherwise disqualified pursuant to debarment proceedings;
5. I/We do not have a conflict of interest as specified in the Act, Rules and the Bidding Document, which materially affects fair competition;

Date :
Place :

Signature of bidder

Name :
Designation :
Address :

Annexure C :

Grievance Redressal during Procurement Process

The designation and address of the First Appellate Authority is Commissioner , JDA, Jaipur.

The designation and address of the Second Appellate Authority is Additional Chief Secretary, UDH, Raj Govt.

(1)Filing an appeal

If any Bidder or prospective bidder is aggrieved that any decision, action or omission of the Procuring Entity is in contravention to the provisions of the Act or the Rules or the Guidelines issued there under, he may file an appeal to First Appellate Authority, as specified in the Bidding Document within a period of ten days from the date of such decision or action, omission, as the case may be, clearly giving the specific ground or grounds on which he feels aggrieved:

Provided that after the declaration of a Bidder as successful the appeal may be filed only by a Bidder who has participated in procurement proceedings:

Provided further that in case a Procuring Entity evaluates the Technical Bids before the opening of the Financial Bids, an appeal related to the matter of Financial Bids may be filed only by a Bidder whose Technical Bid is found to be acceptable.

(2) The officer to whom an appeal is filed under para (1) shall deal with the appeal as expeditiously as possible and shall Endeavour to dispose it of within thirty days from the date of the appeal.

(3) If the officer designated under para (1) fails to dispose of the appeal filed within the period specified in para (2), or if the Bidder or prospective bidder or the Procuring Entity is aggrieved by the order passed by the First Appellate Authority, the Bidder or prospective bidder or the Procuring Entity, as the case may be, may file a second appeal to Second Appellate Authority specified in the Bidding Document in this behalf within fifteen days from the expiry of the period specified in para (2) or of the date of receipt of the order passed by the First Appellate Authority, as the case may be.

(4)Appeal not to lie in certain cases

No appeal shall lie against any decision of the Procuring Entity relating to the following matters, namely:-

(a) Determination of need of procurement;
(b) Provisions limiting participation of Bidders in the Bid process;
(c) The decision of whether or not to enter into negotiations;
(d) Cancellation of a procurement process;
(e) Applicability of the provisions of confidentiality.

(5)Form of Appeal

(a) An appeal under para (1) or (3) above shall be in the annexed form along with as many copies as there are respondents in the appeal.

(b) Every appeal shall be accompanied by an order appealed against, if any, affidavit verifying the facts stated in the appeal and proof of payment of fee.

(c) Every appeal may be presented to First Appellate Authority or Second Appellate Authority, as the case may be, in person or through registered post or authorized representative.

(6) Fee for filing appeal

(a) Fee for first appeal shall be rupees two thousand five hundred and for second appeal shall be rupees ten thousand, which shall be non-refundable.
(b) The fee shall be paid in the form of bank demand draft or banker's cheque of a Scheduled Bank in India payable in the name of Appellate Authority concerned.

(7) Procedure for disposal of appeal

(a) The First Appellate Authority or Second Appellate Authority, as the case may be, upon filing of appeal, shall issue notice accompanied by copy of appeal, affidavit and documents, if any, to the respondents and fix date of hearing.
(b) On the date fixed for hearing, the First Appellate Authority or Second Appellate Authority, as the case may be, shall,-
  (i) Hear all the parties to appeal present before him; and
  (ii) Peruse or inspect documents, relevant records or copies there of relating to the matter.
(c) After hearing the parties, perusal or inspection of documents and relevant records or copies thereof relating to the matter, the Appellate Authority concerned shall pass and order in writing and provide the copy of order to the parties to appeal free of cost.
(d) The order passed under sub-clause (c) above shall also be placed on the State Public Procurement Portal.

FORM No. 1

[See Rule 83]

Memorandum of Appeal under the Rajasthan Transparency in Public Procurement Act, 2012

Appeal No. …… of …… Before the ……..…….. (First/Second Appellate Authority)

1. Particulars of appellant :

(i) Name of the appellant :

(ii) Official address, if any :

(iii) Residential address :

2. Name and address of the respondent (s) :

   (i)

   (ii)

   (iii)

3. Number and date of the order appealed against and name and designation of the officer/authority who passed the order (enclose copy), or a statement of a decision, action or omission of the Procuring Entity in contravention to the provisions of the Act by which the appellant is aggrieved:
4. If the Appellant proposes to be represented by a representative, the name and postal address of the representative:
5. Number of affidavits and documents enclosed with the appeal :
6. Grounds of appeal : ……..
   (Supported by an affidavit)
7. Prayer : ……

Place ……..
Date ……..

Appellant's Signature

Annexure D :

Additional Conditions of Contract

1. **Correction of arithmetical errors**

   Provided that a Financial Bid is substantially responsive, the Procuring Entity will correct arithmetical errors during evaluation of Financial Bids on the following basis:

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

   ii. It there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected ; and

   iii. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (i) and (ii) above.

   If the Bidder that submitted the lowest evaluated Bid does not accept the correction of errors, its Bid shall be disqualified and its Bid Security shall be forfeited or its Bid Securing Declaration shall be executed.

2. **Procuring Entity's Right to Vary Quantities**

   (i) At the time of award of contract, the quantity of Goods, works or services originally specified in the Bidding Document may be increased or decreased by a specified percentage, but such increase or decrease shall not exceed twenty percent, of the quantity specified in the Bidding Document. It shall be without any change in the unit prices or other terms and conditions of the Bid and the conditions of contract.

   (ii) If the Procuring Entity does not procure any subject matter of procurement or procures less than the quantity specified in the Bidding Document due to change in circumstances, the Bidder shall not be entitled for any claim or compensation except otherwise provided in the Conditions of Contract.

   (i) In case of procurement of Goods or services, additional quantity may be procured by placing a repeat order on the rates and conditions of the original order. However, the additional quantity shall not be more than 25% of the value of Goods of the original contract and shall be within one month from the date of expiry of last supply. If the supplier fails to do so, the Procuring Entity shall be free to arrange for the balance supply by limited Bidding or otherwise and the extra cost incurred shall be recovered from the supplier.

3. **Dividing quantities among more than one Bidder at the time of award (In case of procurement of Goods)**

   As a general rule all the quantities of the subject matter of procurement shall be procured from the Bidder, whose Bid is accepted. However, when it is considered that the quantity of the subject matter of procurement to be procured is very large and it may not be in the capacity of the Bidder, whose Bid is accepted, to deliver the entire quantity or when it is considered that the subject matter of procurement to be procured is of critical and vital nature, in such cases, the quantity may be divided between the Bidder, whose Bid is accepted and the second lowest Bidder or even more Bidders in that order, in a fair, transparent and equitable manner at the rates of the Bidder, whose Bid is accepted.

Signature of Contractor
with full address & Mobile No.

Executive Engineer (PHE-I)
JDA, Jaipur

01. Use of Bitumen mixture Tar mechanical lime grinder, cement concrete mixer & vibrator is essential for the work. Which shall have to be arranged by the contractor at his own level/cost?
02. If there is any typographical error or otherwise in the 'G' Schedule the rates given in the relevant BSR on which schedule 'G' has been prepared, shall prevail.
03. The contractor shall follow the contractor labour regulation and abolition Act 1970 & Rule 1971.
04. The JDA shall have right to cause on audit and technical examination of the work and the final bills of the contractor including all supporting vouchers, abstract etc. to be made within two years after payment of the final bills and if as a result such audit any amount is found to have been over paid/excess in respect of any work done by the contractor under the contract or any work claimed by him to have been done under this contract and found not to have been executed the contractor shall be liable to refund such amount and it shall be lawful ;for the JDA to recover such sum from him in ;the manner prescribed in special condition no. 8 or any other manner legally permissible and if it is found that the contractor was paid less then that was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be paid bay the JDA to the contractor.
05. The contractor shall not work after the sunset and before sunrise without specific permission of the authority Engineer.
06. Whenever any claim against the contractor for the payment of a sum of money arises out or under the contracts, the JDA shall be entered to recover the sum by appropriating in part or whole of the security deposit of the contractor. In the event of the security being insufficient or if no security has been taken from the contractor then the balance of the total sum recoverable as the case may shall be deducted from any sum then due or which a any time there contract with the JDA should this sum be sufficient to recover the full amount recoverable, the contractor shall pay to JDA on demand the balance remaining due. The JDA shall further have the right to effect such recoveries under P.D.R. Act.
07. The rate quoted by the contractor shall remain valid for a period of 120 days from the date of opening of the tenders.
08. By submission of this tender the contractor agree to abide with all printed conditions provided in the PWD manual from 64 (Chapter 3-para 36) and subsequent modification.
09. No conditions are to be added by the contractor and conditional tender is liable to be rejected.
10. All transaction in the execution of this work and this tender will be liable to sale-tax vide section 2(B) read with sub clause (4) Sale-tax Rule, 1954.
11. If any tenderer withdraws his tender prior to expiry of said validity period given at S.No. 7 or mutually extended prior or makes modifications in the rates, terms and conditions of the tender within the said period which are not acceptable to the department or fails to commence the work in the specified period, fails to execute the agreement the department shall without prejudice to any, other right or remedy, be at liberty to forfeit the amount of earnest money given in any form absolutely. If any contractor, who having submitted a tender does not execute the agreement or start the work or dose not complete the work and the work has to be put to retendering, he shall stand debarred for six months from participating of tendering in JDA in addition to forfeiture of Earnest Money / Security Deposit and other action under agreement
12. Rules regarding enlistment of contractors provide that work ;upto five times limit for which they are qualified for tendering can be allotted to them Therefore, before tender the contractors will keep this in mind, and submit the details of work. Tenders with incomplete or incorrect information are liable to be rejected.
13. Any material not conforming to the specifications collected at site shall have to be removed by the contractor within a period of 3 days of the instructions, issued by the

Engineer-Incharge in writing. Failing which, such material shall be removed by the Engineer-Incharge at risk and the contractor after expiry of 3 days period.

14. The material collected at site and paid provisionally shall remain under the watch and ward of the contractor till it is consumed, fully on the work.
15. The rates provided in tender documents are inclusive of all Taxes royalty.
16. No extra lead of earth/material shall be paid over and above as specified in 'G' schedule. Source/borrow pit area for earth shall have to be arranged by the Contractor at his own cost.
17. Undersigned has full right to reject any or all tenders without given any reasons.
18. Mortar of Masonry work and lean concrete will be permitted mixer with hopper.
19. As per Supreme Court decision "All contracts with Governments shall require registration of workers under the building and other construction workers (Regulation of Employment and Conditions of Service) Act, 1996 and extension of benefits to such workers under the act."
20. The tenderer are required to submit copy of their enlistment as contractor.
21. Conditions of RPWA-100 will be mandatory & acceptable to the contractor.
22. Any tender received with unattested cutting/overwriting in rates shall be rejected and such bidder will be debarred from tendering for three months in JDA.
23. All the provisions of THE RAJASTHAN TRANSPARENCY IN PUBLIC PROCUREMENT ACT, 2012 and Rules, 2013 will be applicable. If there is any contradictions in existing special conditions and provisions of THE RAJASTHAN TRANSPARENCY IN PUBLIC PROCUREMENT ACT, 2012 and RULES, 2013, provisions of THE RAJASTHAN TRANSPARENCY IN PUBLIC PROCUREMENT ACT, 2012 and RULES 2013 shall be applicable.
24. Time period of work can be increased as per RTPP Rules.
25. **"If any bidder quotes a rate below than the schedule "G" rates, i.e. rates below than "at par", then the bidder has to deposit the difference amount i.e. difference amount of the rates as per "at par" and quoted "below", as "Work Performance Guarantee". This amount has to be deposited before the commencement of work and will be refunded after expiry of DLP only in case of satisfactory performance of work during DLP. Lowest bidder will be issued LOA (Letter of Acceptance) and within 14 days period he has to deposit difference amount in the form of B.G/FDR/NSC. The validity of B.G/FDR/NSC shall be for a period three months beyond of DLP period of work. In case of non deposition of the same in specified period, the bid security will be forfeited. In case work is not completed satisfactorily, the "Work Performance Guarantee" will be forfeited and other action will be taken as per Contract Agreement."**

Signature of Contractor
with full address & Mobile No.

Executive Engineer (PHE-I)
JDA, Jaipur

ANNEXURE- I

[Reference Clause 3(i)]

Signed Photograph of Applicant

To be given on Non-Judicial stamp Paper of Rs. 50/- only,

AFFIDAVIT

I/We…… Proprietor/ Partner/ Authorized signatory of M/s …… under take the oath that the information furnished by me/us of the assessment Bid for …… is correct to the best of my/our knowledge and nothing has been concealed by me. I acknowledge that if in future any information furnished by me is found incorrect I will be solely responsible and shall be punished as per the law and also any benefits in any form obtained by me shall be recoverable.

……

Proprietor/ Partner/ Authorized signatory

M/s ……

……

Note:-

The applicant has to enclose a self attested photo identity card with the above affidavit.

Jaipur Development Authority, Jaipur

Office Order

No. : JDA/IT(1074501)/E-Services/2015-16/D-399 Dated: 4-10-2016

Subject: Payment mechanism for participating in tender.

Jaipur Development Authority has decided to receive Earnest Money Deposit (EMD) (Bid Security), Tender Fee and RISL processing fee online through JDA Portal. The bid security options available in tender for participants are as mentioned below:

A. Payment Options:

Option-1: Bank Guarantee (BG) against EMD / Bid Security

Bidder may opt Bank Guarantee (BG) against EMD (Bid Security), for which bidder requires to prepare BG before applying in the tender. The details of BG requires to be fed on JDA portal before paying balance amount (Tender Fee + RISL Processing Fee). This amount will be paid through **Payment Gateway only**, option to make balance payment through EFT (RTGS/NEFT) will not be available.

If bidder does not opt for BG against EMD, options of making complete payment through Payment Gateway or through EFT (NEFT / RTGS) will be available.

Option-2: Electronic Fund Transfer (EFT: NEFT/RTGS)

If the bidder selects payment mode as EFT (NEFT/RTGS), "**Paying Slip for EFT (NEFT/RTGS)**" will be generated by the system for the complete amount. The payment can be made from **any Bank any Branch** using this Paying Slip through NEFT/RTGS (Claim against payment made through EFT in any other JDA bank account will not be acceptable and bidder stands disqualified from participation in the bid applied for). After successful transaction through NEFT/RTGS, as per the standard procedures it may take 4 to 24 hours in process of confirmation of EFT through Auto-Process depending on the time of EFT done. Therefore, option to make payment through EFT (NEFT/RTGS) will be available till 2 days prior to closing date of bid participation.

Option-3: Payment Gateway (Aggregator)

The facility to make payment through Debit Card, Credit Card, Net banking etc., will be available. User can use this facility from **anywhere any time** till the closing date & time of bid participation.

B. Bid Participation Receipt

After confirming payment, the bidder will get Bid Participation Receipt on the basis of which user will get the payment details along with other details for bidding on e-Procurement portal of GOR.

- In case of BG as the remaining payment will be done through Payment Gateway, on successful transaction the "**Bid Participation Receipt**" will be generated on real time basis.

- In case complete payment is done through Payment Gateway, on successful transaction the "**Bid Participation Receipt**" will be generated on real time basis.
- In case complete payment is done through EFT (NEFT/RTGS), on confirmation of payment from ICICI Bank (Auto Process) "**Bid Participation Receipt**" will be available on Login of Bidder on JDA portal.

This payment mechanism will come into force w.e.f 15/10/2016. Thereafter, old payment mechanism related to NEFT/ RTGS in which the bidder makes direct payment without "**Paying Slip for EFT (NEFT/RTGS)**" in JDA's bank account will be discontinued.

All procuring entities are hereby directed to clearly mention this procedure in NIB document.

(Pawan Arora)
Secretary

Copy for information and further necessary action to:

1. P.S. to JDC, JDA, Jaipur.
2. P.S. to Secretary, Secretary, JDA, Jaipur.
3. Director (Law / Finance / Town Planning / Engineering-I / Engineering-II), JDA, Jaipur.
4. All Additional Chief Engineer _____, JDA, Jaipur
5. DC (Administration)/DC(Store)/DC (Vehicle), JDA, Jaipur
6. System Analyst, JDA, Jaipur
7. Analyst-cum-Programmer, JDA to ensure integration of software w.e.f 01/10/2016.
8. All Xen_____, JDA, Jaipur.
9. Officer-in-charge, SPPP Portal, Jaipur.
10. OSD (Public Relation) / PRO, JDA, Jaipur.

(Brijesh Kishore Sharma)
OSD (RM)

Annexure G:

जयपुर विकास प्राधिकरण, जयपुर

क्रमांक :- F-( )JDA/Sr.Ao.works-II/2017/D-172 दिनांक :- 12.7.17

आदेश

1 जुलाई 2017 से भारत सरकार के नोटिफिकेशन द्वारा GST लागू होने के कारण व्यक्तियों/फर्मो/कम्पनी/संस्था/ठेकेदार के निर्माण/सिविल आपूर्ति/सेवाओं इत्यादि के कार्यो के प्राधिकरण द्वारा बिल भुगतान किये जाने के लिये प्राधिकरण कर सलाहकार चार्टेड एकाउन्टेन्ट से प्राप्त हुई राय के क्रम में निम्नांकित प्रमाण पत्र/शपथ पत्र/Invoice बिलों के साथ प्रस्तुत किया जाना सुनिश्चित करावें :-

1. व्यक्ति/फर्म/कम्पनी/संस्था/ठेकेदार का GST के अन्तर्गत रजिस्ट्रेशन प्रमाण पत्र की स्वःप्रमाणित फोटो प्रति।
2. व्यक्ति/फर्म/कम्पनी/संस्था/ठेकेदार का GST के रजिस्टेशन नही होने के स्थिति में स्वःप्रमाणित शपथ पत्र।
3. अपंजीकृत व्यक्ति/फर्म/कम्पनी/संस्था/ठेकेदार के बिलो के भुगतान की स्थिति में मासिक टैक्स Invoice भुगतान-अधिकारी द्वारा मासिक आधार पर उसी माह के अंत में तैयार करवाया जाना सुनिश्चित किया जावेगा।
4. आपूर्ति एवं सेवा के विरूद्ध भुगतान बिलो में Vat/Service Tax चार्ज होने (Vat/Service Tax होने) पर (दिनांक 30.06.17 तक आपूर्ति एवं Invoice जारी करने पर) Taxable Invoice नहीं बनाया जावेगा एवं इनका भुगतान पूर्वानुसार (01.07.2017 से पूर्व निहित प्रक्रिया अनुसार) किया जाना सुनिश्चित करावें।

स्पष्टीकरण :- दिनांक 30.06.17 तक सामान की आपूर्ति के बिलो में Vat Invoice होने पर या अन्यथा होने पर इनका भुगतान पूर्वानुसार 01.07.2017 से पूर्व निहित प्रकिया अनुसार किया जावेगा।

संलग्न :- GST रेट तथा HSN/SAC CODE की फोटो प्रति

(बृजेश किशोर शर्मा)
निदेशक(वित्त)

प्रतिलिपि निम्न को सूचनार्थ एवं आवश्यक कार्यवाही हेतु :-

1. वरिष्ठ निजी सचिव, आयुक्त, जविप्रा, जयपुर।
2. वरिष्ठ निजी सचिव, सचिव, जविप्रा, जयपुर।
3. निदेशक (वित्त/विधि/अभियांत्रिकी-प्रथम व द्वितीय/आयोजना/परियोजना, जविप्रा, जयपुर।
4. अतिरिक्त आयुक्त(प्रशासन/पूर्व/पश्चिम/एल.पी.सी./भूमि), जविप्रा, जयपुर।
5. संयुक्त आयुक्त(सिस्टम मैनेजमेन्ट/संसाधन एवं समन्वय), जविप्रा, जयपुर।
6. विशेषाधिकारी(संसाधन विकास), जविप्रा, जयपुर।
7. अतिरिक्त निदेशक(राजस्व एवं सम्पति निस्तारण), जविप्रा, जयपुर।
8. समस्त जोन उपायुक्तगण ....., जविप्रा, जयपुर।
9. मुख्य लेखाधिकारी(पी. एण्ड ए.), जविप्रा, जयपुर।
10. उपनिदेशक(व्यय एवं बजट), जविप्रा, जयपुर।
11. वरिष्ठ लेखाधिकारी(निर्माण-प्रथम/द्वितीय/आर.सी.आर./पेंशन/नीलामी), जविप्रा, जयपुर
12. सिस्टम एनालिस्ट, जविप्रा, जयपुर को प्रेषित कर लेख है कि सिस्टम में GST नम्बर सम्मिलित करने एवं Tax Invoice बनाने की प्रक्रिया तैयार करावें
13. उप रजिस्ट्रार(सहकारिता), जविप्रा, जयपुर।
14. अधिशाषी अभियन्ता जोन ....., जविप्रा, जयपुर।
15. वरिष्ठ उद्यानविज्ञ, जविप्रा, जयपुर।
16. लेखाधिकारी (भुगतान/योजना/निर्माण)/सहायक लेखाधिकारी, जविप्रा, जयपुर।
17. प्रभारी अधिकारी, नागरिक सेवाकेन्द्र, जविप्रा, जयपुर
18. सलाहकार(जनसम्पर्क), जविप्रा, जयपुर।
19. रोकडियॉ(निर्माण/सिविल/भूमि आवण्टि), जविप्रा, जयपुर।
20. रक्षित पत्रावली

अति.निदेशक(रा.एवं स.नि.)

D:\Babulal computer\ADR Cell\Exal 2010\U.O. Note 1.doc

ANNEXURE- II

Bank Guarantee Performa for Bid security deposit

Form of (Bank Guarantee) -En cashable at branch of the bank in Jaipur City.

To
Secretary,
Jaipur Development Authority,
Jaipur

Sub:
Bank Guarantee No. _____ dated _____ for [amount of Security in figures] [in words] on behalf of _____ [Name of the Bidder] against the Security Deposit for the work of "Operation & maintenance of Bisalpur water supply scheme PAP Area SEZ zone 1 to 5 and WSS from Khatwara pump house to Jaisinghpurawas BSUP flats JDA for two year under PHE-I, Jurisdiction, JDA, Jaipur"

WHEREAS, _____ [name of Bidder with address] **(hereinafter called "the Bidder")** has submitted his Bid dated ..... for the work of "Operation & maintenance of Bisalpur water supply scheme PAP Area SEZ zone 1 to 5 and WSS from Khatwara pump house to Jaisinghpurawas BSUP flats JDA for two year under PHE-I, Jurisdiction, JDA, Jaipur" **(Name of Work)** (Hereinafter called "the Bid").

KNOW ALL PEOPLE by these presents that we _____ _____ (Name of Bank) of having our registered office at _____[name of country] having our registered office at _____ (hereinafter called "the Bank") are bound unto Secretary, Jaipur Development Authority. (Hereinafter called "the Employer") in the sum of Rupees _____ **[Amount of Security in figures]** _____ (in words) only for which payment will and truly to be made to the said Employer, the Bank binds itself, its successors, and assigns by these presents.
That on demand of JDA , this Bank Guarantee is encashable at following branch in Jaipur City.
1. Name of Bank:
2. Name of the branch with branch code:
3. Address:
4. E-Mail Id:
5. Telephone No.
6. Fax No.:

SEALED with the Common Seal of the said Bank this _____ day of _____ of 20____.
THE CONDITIONS of this obligation are:

(1) if the Bidder withdraws his Bid during the period of Bid validity specified in the Form of Bid;

(2) if the Bidder refuses to accept the correction of errors in his bid;

(3) If the Bidder, having been notified of the acceptance of his Bid by the Employer during the period of Bid validity;

(a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, or

(b) fails or refuses to furnish the Performance Security, in accordance with the Instructions to Bidders;

We undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owing to the occurrence of one or more of the above conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date 30 days after the date of expiration of the Bid Validity, as stated in the Instructions to Bidders, or any such extension thereto as may be agreed by the Bidder, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

The amount covered under the above Bank Guarantee shall be automatically be credited in the accounts of JDA in ICICI Bank, JDA Campus, Jaipur through **ISFC code No ICIC0006754. Bank Account No. 675401700518** on the date of expiry or its validity, unless the agencies get it re-validated well before its expiry date or produce NOC from JDA in written for its release.

Date _____Signature of the Bank_____

Witness_____ Seal _____

[Signature, Name and Address]

[Note: To be furnished on appropriate non-judicial stamps.]

PAYMENT MECHANISM FOR PARTICIPATING IN TENDER

Jaipur Development Authority has decided to receive Earnest Money Deposit (EMD) (Bid Security) Tender fee online through JDA portal. The bid security options available in tender for participants are as mentioned below :

A. Payment Options:

Option-1: Bank Guarantee (BG). against EMD / Bid Security

Bidder may opt Bank Guarantee (BG) against EMD (Bid Security) for which bidder requires to prepare BG before applying in the tender. The details of BG requires to be fed on JDA portal before paying balance amount (Tender Fee). This amount will be paid through **Payment Gateway only,** option to make balance payment through EFT (RTGS/NEFT) will not be available

If bidder does not opt for BG against EMD, options of making complete payment through Payment Gateway or through EFT (NEFT/RTGS) will be available

Option-2: Electronic Fund Transfer (EFT: EFT/RTGS)

If the bidder selects payment mode as EFT (NEFT/RTGSL **"Paying Slip for EFT (NEFT/RTGS}"** will be generated by the system for the complete amount. The payment can be made from **any Bank any Branch** using this Paying Slip through NEFT/RTGS (Claim against payment made through EFT in any other JDA bank account will not be acceptable and bidder stands disqualified from participation in the bid applied for). After successful transaction through NEFT/RTGS, as per the standard procedures it may take 4 to 24 hours in process of confirmation of EFT through Auto-Process depending on the time of EFT done. Therefore, option to make payment through EFT (NEFT/RTGS) will be available till 2 days prior to closing date of bid participation.

Option-3: Payment Gateway (Aggregator)

The facility to make payment through Debit Card, Credit Card, Net banking etc., will be available. User can use this facility from **anywhere any time** till the closing date & time of bid participation

B. Bid Participation Receipt

After confirming payment, the bidder will get Bid Participation Receipt on the basis of which user will get the payment details along with other details for bidding on e-Procurement portal of GOR

- In case of BG as the remaining payment will be done through Payment Gateway, on successful transaction the **"Bid Participation Receipt"** will be generated on real time basis
- In case complete payment is done through Payment Gateway, on successful transaction the **"Bid Participation Receipt"** will be generated on real time basis
- In case complete payment is done through EFT (NEFTIRTGS), on confirmation of payment from ICICI Bank (Auto Process) **"Bid Participation Receipt"** will be available on Login of Bidder on JDA portal.

-SD-
Executive Engineer (PHE-I)
JDA, Jaipur

Bill of Quantities

Jaipur Development Authority

Name of Work:- Operation & maintenance of bisalpur water supply scheme PAP area SEZ zone no 1 to 5 and WSS from Khatwara pump house to jaisinghpurawas BSUP flats JDA, for 2 years under PHE-I jurisdiction, JDAJaipur.

G-Schedule

Part 'A'-Supply of different piping, machanical, electrical material (BSR item)

Sl. No.	Particulars	No. or Qty.	Unit	Rate	AMOUNT
1.00	Providing, laying and jointing of UPVC class III (6 kg/cm2) ISI marked pipe with socket suitable for electromeric sealing ring type joint (ESR) in assorted length with fixing of PVC/C.I. Special (excluding cost of valve)fixing at CID joint after cutting, tapering etc. This include the excavation of trench upto 1.5 mtr. depth in all type of soil cutting of road surface pavement where required lift upto 1.5 mtr. stacking the soil clear form the edge of excavation and refilling of soil after laying and jointing of pipe line with proper compaction and disposing of all surplus soil as directed with in lead of 30 mtr. This also include getting the pipe line tested and site clearance etc. complete job (Make of pipe KISAN, FINOLEX). **(D-547 dt. 20.12.2011)**				
1.01	110 mm	200.00	R. Mtr.	355.00	71000.00
1.02	140 mm	50.00	R. Mtr.	532.00	26600.00
1.03	160 mm	50.00	R. Mtr.	691.00	34550.00
1.04	180 mm	50.00	R. Mtr.	832.00	41600.00

2.00	Providing, Laying & Jointing in standard lengths HDPE PE-80 PN-6 pipes conforming to IS-4984:1995 (UP TO DATE) with necessary jointing material like mechanical connection i.e. thread/insert/quick release coupler joint/compression fitting joint of flanged joint and specials jointing pipe by butt fusion welding method, including all taxes (central and local), transportation and freight charges inspection charges loading/unloading charges, stacking the same in closed shade duly protecting from sunray and rain including cost of labour and material, specials (Tees, bend etc.) and also including the excavation of trench up to 1.5 Meter depth in all type of soil cutting of road surface pavement where required lift up to 1.5- Mt. stacking the soil clear from the edge of excavation and refilling of soil after laying and jointing of pipe line with proper compaction and disposing of all surplus soil as directed with in lead of 50 Meter with satisfactory, hydraulic testing etc. complete as per technical specifications and direction of Engineer-in-charge. (supply up to 90 mm dia. Coil & above 90 mm dia straight length in 6.0 M)				
2.01	90 mm dia	500.00	Mtr.	318.00	159000.00
2.02	110 mm dia	500.00	Mtr.	441.00	220500.00
3.00	Providing/fixing/testing KG of DI specials (K-7) i.e. bend, tees, tail pieces, flanges etc. of various size as per the site condition and requirement including all jointing material in all respects, As per PHED specification. **(D-306 dt. 28.04.2009)**	400.00	Kg.	90.00	36000.00
4.00	Supply of cast iron specials (class-10) as per IS : 5531-1988) specification as required. **(D-547 dt. 20.12.2011)**				
4.01	80 mm to 150 mm	100.00	Kg.	58.00	5800.00
4.02	350 mm to 400 mm	50.00	Kg.	67.00	3350.00
5.00	Providing, fabricating and installing MS specials including rolling, cutting, welding in different shape and size. **(D-547 dt. 20.12.2011)**	400.00	Kg.	80.00	32000.00
6.00	Supply of cast iron detachable joints class-10 as per ISI specification (IS 8794-1988) along with rubber ring (ISI marked) and nut bolts complete as per PHED specificatins. **(D-547 dt. 20.12.2011)**				
6.01	100 mm	100.00	Each	274.00	27400.00
6.02	125 mm	20.00	Each	360.00	7200.00
6.03	200 mm	20.00	Each	652.00	13040.00
6.04	250 mm	20.00	Each	881.00	17620.00
6.05	300 mm	4.00	Each	1090.00	4360.00
6.06	450 mm	20.00	Each	2677.00	53540.00

7.00	Supply and fixing of cast iron double sluice valves IS 14846/2000 specification (ISI marked) of PN-1 rating including cost of rubber flange gaskit and nut bolts complete as required for following sizes. **(D-547 dt. 20.12.2011)**				
7.01	100 mm	5.00	Each	5541.00	27705.00
7.02	125 mm	5.00	Each	6817.00	34085.00
7.03	250 mm	5.00	Each	23269.00	116345.00
7.04	300 mm	3.00	Each	34984.00	104952.00
8.00	Labour charges for inter connection of proposed pipe line with existing, pipe line by digging of Pit, cutting of pipe, without bailing out of water and satisfactory testing of inter connection and site clearance.**(D-547 dt. 20.12.2011)**	30.00	Each	890.00	26700.00
9	P/Laying P.V.C. / XLPE insulated & P.V.C. sheathed cable of 1.1 KV grade with aluminium conductor of IS:1554 P-I / IS :7098 P - I of Group 1 of approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand,IInd class bricks covering, refilling earth,compaction of earth, making necessary connection, testing etc. as required of size.				
9.01	10 Sq.mm 4 core Complete Rate Armoured	250.00	Mtr.	136.00	34000.00
9.02	25 Sq.mm 3.5 core Complete Rate Armoured	100.00	Mtr.	166.40	16640.00
9.03	50 Sq.mm 3.5 core Complete Rate Armoured	100.00	Mtr.	239.20	23920.00
9.04	70 Sq.mm 3.5 core Complete Rate Armoured	50.00	Mtr.	310.40	15520.00
10.00	Providing laying & Jointing of ISI mark centrifugally cast (Spun) ductile iron pressure pipe for water with socket and spigot end and Tyton joint confirming to IS 8329/2000 and departmental specification in standard length (As required) for (Class K-7) suitable for push on joint (rubber gaskets jointing) with side cement mortar lining with cutting of pipe and fixing of C.I. special joint where ever required. This also include the excavation of trench up to 1.5 Meter depth in all type of soil cutting of road surface pavement where required lift up to 1.5 Mt. stacking the soil clear form the edge of excavation and refiling of soil after laying and jointing of pipe line with proper compaction and disposing of all surplus soil as directed with in lead of 30 Meter. This also include getting the pipe line tested and site clearance etc.**(D-878 dt.01.09.2008)**				
10.01	250 mm	150.00	P Mtr.	3184.00	477600.00
10.02	450 mm	50.00	P Mtr.	7148.00	357400.00

11.00	Labour charges for inter connection of proposed pipe line with existing, pipe line by digging of Pit, cutting of pipe, dewatering through pumps and satisfactory testing of inter connectin and site clearance.**(D-547 dt. 20.12.2011)**	20.00	Each	2512.00	50240.00
12.00	Supply and fixing of cast Iron Air valves 14845/20 specification (ISI marked) including cost of MS clamp, GI pipe, MS/GI flange, rubber flange gaskit and nut bolts complete as required for following sizes. (D-547 dt. 20.12.2011)				
12.01	25 mm size Air valve	2.00	Each	1202.00	2404.00
12.01	50 mm Double air valve	2.00	Each	3730.00	7460.00
			Total	**Rs.**	**2048531.00**
			Say	**Rs.**	**2048531.00**

Executive Engineer (PHE-I)
JDA, Jaipur

I/We quoted schedule " G "
(In Words…….…….…….…….)

'Signature of Contractor
With full Address & Mobile No.

Jaipur Development Authority

Name of Work: Operation & maintenance of bisalpur water supply scheme PAP area SEZ zone no 1 to 5 and WSS from Khatwara pump house to jaisinghpurawas BSUP flats JDA, for 2 years under PHE-I jurisdiction, JDA Jaipur.

H-Schedule

Part 'B'-Operation & maintenance of schemes (Non BSR item)

Sl. No.	Particulars	No. or Qty.	Unit	Rate	AMOUNT
1.10	Operation and Maintenance of following WSS as per scope of work & special condition of contract including complete repair of various pipe lines, pumping machinery, switches, starters, etc. along with providing of all type of material (ISI marked as per PHED norms) required for maintenance and repair, rewinding and repair of all type of motors, handpumps in all respect to avoid any disruption in water supply (Except Electricity Bill) Provision for operation and maintenance of water supply scheme SEZ Zone No. 1 to 5 as per scope of work.	24.00	Month		
1.20	Operation and Maintenance of following WSS as per scope of work & special condition of contract including complete repair of various pipe lines, pumping machinery, switches, starters, etc. along with providing of all type of material (ISI marked as per PHED norms) required for maintenance and repair, rewinding and repair of all type of motors, handpumps in all respect to avoid any disruption in water supply (Except Electricity Bill) Provision for operation and maintenance of water supply scheme from Khatwara Pump house to Jaisinghpurawas BSUP flats JDA as per scope of work.	24.00	Month		
			Total	**Rs.**	

Executive Engineer (PHE-I)
JDA, Jaipur

I/We quoted schedule " G "
(In Words…….……..……..……)

'Signature of Contractor
With full Address & Mobile No.