BIDDING DOCUMENT

FOR

THE PROCUREMENT OF

Pipeline Extension work at Kirtipur-5 Adhikari Tole, Padhero Dol / Supplying, laying and joining of 90mm dia. HDPE pipeline at Kirtipur-5, Sanjaya Shinga Marga

Sealed Quotation

Issued by:

Kathmandu Upatyaka Khanepani Limited, Kirtipur Branch

Kirtipur Kirtipur Kathmandu

Sealed Quotation Number	KUKL/KIRTIPUR/SQ/04/081-082
Issued On	28-04-2025

Abbreviations

BD ... Bidding Document

BDF ... Bidding Forms

BDS ... Bid Data Sheet

BOQ ... Bill of Quantities

COF ... Contract Forms

DP ... Development Partners

DoLI... Department of Local Infrastructure

ELI ... ... Eligibility

EEC... Evaluation and Eligibility Criteria

GCC ... General Conditions of Contract

GoN[1] ... Government of Nepal

ICC ... International Chamber of Commerce

IFB ……. Invitation for Bids

ITB ... Instructions to Bidders

JV ... Joint Venture

NCB ... National Competitive Bidding

PAN ... Permanent Account Number

PPA ... Public Procurement Act

PPMO ... Public Procurement Monitoring Office

PPR ... Public Procurement Regulations

SBD ... Standard Bidding Document

SCC ... Special Conditions of Contract

TS ... Technical Specifications

VAT ... Value Added Tax

WRQ ... ... Works Requirements

[1] "GoN" word indicates all public entities according to Public Procurement Act, 2063

Table of Contents

Section I.	Instruction to Bidders (ITB)	
Section II.	Bid Data Sheet (BDS)	
Section III.	Eligibility Criteria	
Section IV	Bidding Forms	
Section V	Works Requirements	
Section VI.	Bill of Quantities	
Section VII.	General Conditions of Contract	(GCC)
Section VIII.	Special Conditions of Contract	(SCC)
Section IX	Contract Forms	

Invitation for Sealed Quotation

Name of the Office:Kathmandu Upatyaka Khanepani Limited, Kirtipur Branch

Address of the Office:
Kirtipur Kirtipur Kathmandu

Sealed Quotation No:KUKL/KIRTIPUR/SQ/04/081-082

Date of Publication : 28-04-2025

1. The Kathmandu Upatyaka Khanepani Limited, Kirtipur Branch invites sealed quotations from registered contractors for the construction of Pipeline Extension work at Kirtipur-5 Adhikari ....

2. The Estimated amount for the works is(in NRs.): 1,624,822.90 (Exclusive of VAT and Contingencies)

3. Eligible Bidders may obtain further information and inspect the Sealed quotation Forms at the office of Kathmandu Upatyaka Khanepani Limited, Kirtipur Branch at Kirtipur Kirtipur Kathmandu or by reaching out to them at Telephone 014330545 or by dropping a mail at kukl.kirtipur@gmail.com [or may visit PPMO website www.bolpatra.gov.np.]

4. Sealed Quotation Forms may be purchased by eligible Bidders on the submission of a written application and upon payment of a non-refundable fee of 1000.0 NRs.

Or

Bidder who chooses to submit their bid electronically shall deposit the cost of bidding document in the account specified below:

Name of the Bank:	NIC Asia Bank Ltd.
Name of the Office:	Kathmandu Upatyaka Khanepani Limited, Kirtipur Branch
Office Code no:	
Office Account no:	3941223810524002
Rajaswa (revenue) Shirshak no:	

5. Sealed bids must be submitted to the above office by hand or through e-GP system i.e www.bopatra.gov.np/egp on or before 13-05-2025 12:00 hours . Bids received after this deadline will be rejected.

6. Sealed Quotations shall be opened in the presence of Bidders' representatives who choose to attend at 13-05-2025 14:00 hours at the office of Kathmandu Upatyaka Khanepani Limited, Kirtipur Branch, Bids must be valid for a period of 45 days after bid opening and must be accompanied by a bid security amounting to a minimum of NRs.50000 which shall be valid for 30 days beyond the validity period of the bid i.e 75 days.

7. If the last date of purchasing and /or submission falls on a government holiday, then the next working day shall be considered as the last date. In such case the validity period of the bid security shall remain the same as specified for the original last date of bid submission.
[Note : As mentioned in clause 49ka of PPR 2064 clause 49ka ,add more relevant information as per required]

Section - II
Instruction to Bidders

Section I. Instruction to Bidders(ITB)

1. Scope of Works	1.1 The Employer stated in the BDS for the construction of works as detailed in attached specifications, drawings and the bill of quantities provided herein. The name of *Employer, name of project and contract identification number of Contracts* are **provided in the BDS**.
2. Eligible Bidder	2.1 This Invitation for Bids is open to all registered contractors with eligibility criteria specified in section III Eligibility Criteria. A bidder declared blacklisted and ineligible by the GoN, Public Procurement Monitoring Office (PPMO) and/or the DP in case of DP funded project, shall be ineligible to bid for a contract during the period of time determined by the GoN, PPMO and/or the DP. 2.2 In case of a natural person or firm/institution/company which is already declared blacklisted and ineligible by the GoN, any other new or existing firm/institution/company owned partially or fully by such Natural person or Owner or Board of director of blacklisted firm/institution/company; shall not be eligible bidder. 2.3 Firms shall be excluded if the corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV shall not be eligible to participate in procurement process till the concerned Court has not issued the decision of clearance against the Corruption Charges
3. One Bid per Bidder	3.1 Each Bidder shall submit only one quotation. A Bidder who submits more than one quotation shall cause all the quotations with the Bidder's participation to be disqualified.
4. Cost of Bidding	4.1 The Bidder shall bear all costs associated with the preparation and submission of his bid and the Employer shall in no case be liable for those costs.
5. Site Visit	5.1 The Bidder at his own cost, responsibility and risk may visit the site of the works and acquire all necessary information for preparing the bid and entering into a contract for construction of the works.
6. Content of Quotation Form	6.1 The Quotation Form comprise the documents listed below: Section I: Instructions to Bidders Section II: Bid Data Sheet Section III : Eligibility Criteria Section IV: Bidding Forms Section V: Works Requirements Section VI: Bill of Quantities Section VII: General Conditions of Contract (GCC) Section VIII: Special Conditions of Contract (SCC) Section IX: Contract Forms

7. Clarification	7.1 A prospective Bidder may obtain clarification on the Quotation Form from the Employer on or before 5 days prior to the deadline for submission of quotation.
8. Language of Bid	81. All documents relating to the bid shall be in English /Nepali.
9. Documents Comprising Bid	The bid by the Bidder shall comprise the following: • Letter of Bid • Eligibility Information/Document • Bid Security and • Priced Bill of Quantities
10. Bid Prices	10.1 The contract shall be for the whole works described in scope of works based on the priced Bill of Quantities submitted by the Bidder. The Bidder shall fill in rates and prices for all items of the works in Nepali Rupees. Items for which no rate or price is entered shall be deemed covered by the other rates and prices in the Bill of Quantities and shall not be paid separately by the Employer. All duties, taxes and other levies payable by the contractor under the contract shall be included in the rates, prices and total Bid Price submitted by the Bidder.
11. Bid Validity	11.1 Bids shall remain valid for the period **specified in the BDS** after the bid submission deadline date prescribed by the Employer. A bid valid for a shorter period shall be rejected by the Employer as nonresponsive.
12. Bid Security	12.1 The Bidder shall furnish as part of its bid, in original form, a bid security **as specified in the BDS.** In case of e-submission of bid, the Bidder shall upload scanned copy of Bid security letter at the time of electronic submission of the bid. The Bidder accepts that the scanned copy of the Bid security shall, for all purposes, be equal to the original. The details of original Bid Security and the scanned copy submitted with e-bid should be the same otherwise the bid shall be non-responsive. 12.2 The bid security shall be, at the Bidder's option, in any of the following forms: (a) an unconditional bank guarantee from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law or; (b) a cash deposit voucher in the Employer's Account as specified in BDS. In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section III (Bidding Forms) or in another Form acceptable to the employer. The form must include the complete name of the Bidder. The bid security shall be valid for minimum thirty (30) days beyond the original validity period of the bid 12.3 Any bid not accompanied by an enforceable and substantially compliant bid security shall be rejected by the Employer as nonresponsive. In case of e-Submission, if the scanned copy of an acceptable Bid Security letter is not uploaded with the electronic Bid then Bid shall be rejected. 12.4 The bid security shall be forfeited if: (a) a Bidder requests for withdrawal during the period of bid validity specified by the Bidder on the Letter of Bid, after bid submission deadline. (b)a Bidder changes the prices or substance of the bid while providing information; (c) a Bidder involves in fraud and corruption pursuant to clause 27; (d) the successful Bidder fails to:

	(i) furnish a performance security in accordance with clause 25 and 26; (ii) sign the Contract in accordance within the period stipulated in Letter of Acceptance; or (iii) accept the correction of arithmetical errors pursuant to clause 21.1
13. Format and Signing of Bids	13.1 The bid shall be typed or written in indelible ink and shall be signed by an authorized person. Any entries or amendments including alternations, additions or corrections made shall be initialed by the same authorized person.
14. Sealing and Marking of Bids	14.1 Bidders may submit their bids by hand copy or by electronically. When so **specified in the BDS**, bidders shall have the option of submitting their bids electronically. Procedures for submission, sealing and marking are as follows: (a) Bidders submitting bids by hand copy: The Bidder shall submit his bid in sealed envelopes. The envelope shall be addressed to the Employer specified in the Invitation for Quotation and shall bear the name and identification number of the quotation. (b) Bidders submitting Bids electronically shall follow the electronic bid submission procedure **specified in the BDS**
15. Deadline for Submission of Bids	15.1 Bids shall be delivered to the Employer at the address no later than the time and date **specified in BDS.**
16. Late Bids	16.1 Any bid received by the Employer after the deadline shall not be accepted and shall be returned unopened to the Bidder upon request.
17.Modification And Withdrawal of Bids	17.1 Bids once submitted shall not be withdrawn or modified.
18. Bid Opening	18.1 The Employer shall open the bids in the presence of the Bidders' representatives who choose to attend at the time and in the place **as specified in the BDS**. The Employer shall prepare and provide minutes of the bid opening including the information disclosed to those present.
19. Process to be Confidential	19.1 Information relating to the examination, evaluation and comparison of bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any efforts by the Bidder to influence the Employer in the bid evaluation, bid comparison or contract award decisions may result in rejection of Bidder's bid.
20.Examination of Bids	201. Prior to the detailed evaluation of Bids, the Employer shall determine whether each bid (a) meets the eligibility criteria defined in Clause 2; (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the Bidding documents.
21. Evaluation and Comparison of Bids	21.1 In evaluating the Bids, the Employer shall determine for each bid the evaluated Bid Price by adjusting any corrections for errors. Bids shall be checked by the Employer for any arithmetic errors. Errors shall be corrected by the Employer as follows:

	(a) only for unit price Contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected; (b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and (c) If there is a discrepancy between the bid price in the Summary of Bill of Quantities and the bid amount in item (c) of the Letter of Bid, the bid price in the Summary of Bill of Quantities will prevail and the bid amount in item (c) of the Letter of Bid will be corrected. (d) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) ,(b) and (c) above. 21.2 In case of e-submission of bid, upon notification from the employer, the bidder shall also submit the original of documents comprising the bid as per ITB 9 for verification of submitted documents for acceptance of the e-submitted bid. If a Bidder does not provide original of document of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected. 21.3 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. 21.4 If the corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV such bidder's bid shall be excluded during the evaluation.
22. Award of Contract	22.1 The Employer shall decide the award of the contract to the Bidder whose bid is within the approved estimate and who has offered the lowest evaluated Bid Price within bid validity period provided that such Bidder has been determined to be eligible in accordance with the provisions of Clauses 2. 22.2 if the bid for an Unit Rate Contract, which results in the lowest Evaluated Bid Price is seriously unbalanced or front loaded **or extremely low** in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analysis, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder as **mentioned in BDS** to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract **or may consider the bid as non-responsive**.
23. Employer's Right to Accept any Bid and to Reject any or all Bids	23.1 The Employer reserves the right to accept or reject any bid or to cancel the bidding process and reject all bids, at any time prior to the award of the contract, without assigning any reasons whatsoever and without thereby incurring any liability to the affected Bidder or Bidders.
24. Notification of Award and	24.1 The Bidder whose bid is accepted and all other participating bidders shall be notified of the award by the Employer.

Signing of Agreement	24.2 The notification (hereafter called the "Letter of Acceptance") to the successful Bidder shall state the sum that the Employer shall pay the Bidder in consideration of the execution, completion, and maintenance of the works as described by the contract. Within 7 days of receipt of the Letter of Acceptance, the successful Bidder shall deliver the Performance Security pursuant Clause 25and sign the Agreement. 24.3 Inability of the Bidder to make an Agreement within the above stated period shall result in cancellation of the Contract Award and forfeiture of the Bidder's Bid Security, upon which the Contract shall then be awarded to the next successive successful Bidder.
25.Performance Security	251. Within seven (7) days of the receipt of Letter of Acceptance from the Employer, the successful Bidder shall furnish the performance security as under mentioned from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal in accordance with the conditions of Contract using Sample Form for the Performance Security included in Section IX (Contract Forms), or another form acceptable to the Employer. i) If bid price of the bidder selected for acceptance is up to 15 (fifteen) percent below the approved cost estimate, the performance security amount shall be 5 (five) percent of the bid price. ii) For the bid price of the bidder selected for acceptance is more than 15 (fifteen) percent below of the cost estimate, the performance security amount shall be determined as follows: **Performance Security Amount =** **[(0.85 x Cost Estimate – Bid Price) x 0.5] + 5%of Bid Price.** The Bid Price and Cost Estimate shall be inclusive of Value Added Tax.
26.Additional Securities	26.1 The Bidder may be required to provide additional Performance Security if the Employer determines that the rate quoted by the Bidder in the Bill of Quantities, front loaded or unbalanced. In such case, the Employer shall instruct the Bidder to provide additional 8% security for signing of the Contract Agreement. Bidder's failure to do provide additional security shall result in forfeiture of the Bid Security and award of the Contract to the next lowest evaluated Bidder.
27.Corrupt or Fraudulent Practices	27.1 The Employer shall reject a bid for award if it determines that the Bidder recommended for award of contract has engaged in corrupt or fraudulent practices in competing for the contract in question.
28.Conduct of Bidders	28.1The Bidder shall be responsible to fulfill his obligations as per the requirement of the Contract Agreement, Bidding documents, GoN's Procurement Act and Regulations. 28.2 The Bidder shall not carry out or cause to carry out the following acts with an intention to influence the implementation of the procurement process or the procurement agreement : a) give or propose improper inducement directly or indirectly, b) distortion or misrepresentation of facts c) engaging or being involved in corrupt or fraudulent practice d) Interference in participation of other prospective bidders. e) coercion or threatening directly or indirectly to cause harm to the person or the property of any person to be involved in the procurement proceedings,

	f) collusive practice among bidders before or after submission of bids for distribution of works among bidders or fixing artificial/uncompetitive bid price with an intention to deprive the Employer the benefit of open competitive bid price.. g) contacting the Employer with an intention to influence the Employer with regards to the bid or interference of any kind in examination and evaluation of the bids during the period after opening of bids up to the notification of award of contract
29.Blacklisting Bidder	29.1 Without prejudice to any other right of the Employer under this Contract, GoN, Public Procurement Monitoring Office may blacklist a bidder for his conduct up to three years on the following grounds and seriousness of the act committed by the bidder: a) if it is proved that the bidder committed acts pursuant to the Sub-Clause 28.2, b) if it is proved later that the bidder/contractor had committed substantial defect in implementation of the contract or had not substantially fulfilled his obligations under the contract or the completed work is not of the specified quality as per the contract , c) if convicted by a court of law in a criminal offence which disqualifies the bidder from participating in the contract. d) if it is proved that the contract agreement signed by the bidder was based on false or misrepresentation of bidder's qualification information, 29.2 A firm declared blacklisted and ineligible by the GON shall be ineligible to bid for a contract during the period of time determined by the PPMO.
30. Provision of PPA and PPR	If any provision of this document is inconsistent with Public Procurement Act (PPA), 2063 or Public Procurement Regulations (PPR), 2064, the provision of this documents shall be void to the extent of such inconsistency and the provision of PPA and PPR shall prevail.

Section - II
Bid Data Sheet

Bid Data Sheet

ITB 1	The scope of work is : WORKS SEALED QUOTATION
ITB 1	The number of the Invitation for Bids is : KUKL/KIRTIPUR/SQ/04/081-082
ITB 1	The Employer is : Kathmandu Upatyaka Khanepani Limited, Kirtipur Branch
ITB 11	The bid validity period shall be: 45 days.
ITB 12.1	The Bidder shall furnish a bid security, from 'A' class commercial bank with a minimum of 50000, which shall be valid for 30 days beyond the validity period of the bid.
ITB 12.2	Cash Deposit Account for Bid Security : Bank Name: NIC Asia Bank Ltd. Bank Address: Kirtipur Branch Account Name: KUKL KTP OTHER DEPOSIT Account Number: 3941223810524002
ITB 14.1	Bidders shall have the option of submitting their bids electronically. Electronic submission procedure shall be : i. The bidder is required to register in the e-GP systemhttps://www.bolpatra.gov.np/egpfollowing the procedure specified in e-GP guideline. ii. Interested bidders may either purchase the bidding document from the employer's office as specified in the Invitation for Bid (IFB) or bidders may download the IFB and bidding document from e-GP system. iii. The registered bidders need to maintain their profile data required during preparation of bids. iv. In order to submit their bids electronically the cost of the bidding document shall be deposited in the account specified in IFB. In addition, electronic scanned copy (.pdf format) of the bank deposit voucher/cash receipt should also be submitted along with the bid. v. The bidder can prepare their bids using data and documents maintained in bidder’s profile and forms/format provided in bidding document by Employer. The bidder may submit bids as a single entity. vi. Bidders should update their profile data and documents required during preparation and submission of their bids. The required forms and documents shall be part of technical bids. 1. Letter of Bid (Mandatory) 2. Bid Security/Bank Guarantee (Mandatory) 3. Company registration (Mandatory) 4. VAT registration (Mandatory) 5. Tax clearances certificate or evidence of tax return submission (Mandatory) 6. Power of Attorney of Bid signatory (Mandatory) 7. Completed BoQ (Mandatory) 8. Bank Voucher for cost of bid document (Mandatory) 9. Additional documents specified in Bidding Document (If required) Note : The documents specified as “Mandatory” should be included in e-submission. vii. After providing all the details and documents, bid response documents will be generated from the system. Bidders are advised to download and verify the response documents prior to bid submission. viii. For verifying the authentic user, the system will send one time password in the registered email address of the bidder. System will validate the OTP and allow bidder to submit their bid. ix. Once bid is submitted, bidders won’t able to modify/withdrawal their bid. x. The Bidder / Bid shall meet the following requirements and conditions for e-submission of bids : The e-submitted bids must be readable through PDF reader. The facility for submission of bid electronically through e-submission is to promote transparency, non-discrimination, equality of access, and open competition in the bidding process. The Bidders are fully responsible to use the e-submission facility properly in e-GP system as per specified procedures and in no case the Employer shall be held liable for Bidder's inability to use this facility. When a bidder submits electronic bid through the PPMO e-GP portal, it is assumed that the bidder has prepared the bid by studying and examining the complete set of the Bidding documents including specifications, drawings and conditions of contract.
ITB 15	The deadline for Sealed Quotation submission is:13-05-2025 12:00 Address:Kirtipur Kirtipur Kathmandu

ITB 18	The bid opening shall take place at : Address :Kathmandu Upatyaka Khanepani Limited, Kirtipur Branch Kirtipur Kirtipur, Kathmandu Bagmati Province Nepal Date and Time:13-05-2025 14:00 a) e-GP system allows to download the bid response document only after bid opening date and time are met. Simultaneous login of two members of the opening committee is required for bid opening. b)The Employer shall conduct the opening of bid at the address on the same date and time as specified in bidding document in the presence of Bidders' representatives who choose to attend

Section - III
Eligibility Criteria

Eligibility Requirements
All Bidders shall submit following documents as pre- requisites for eligibility:

1 Firm/Company Registration Certificate

2 Business Registration Certificate (License)

3 PAN/VAT Registration Certificate

4 Tax Clearance Certificate/ Extension Letter/Tax return submission evidence for the F/Y

5 Power of Attorney

6 Letter of Bid

7 insert addition document if required

Notes to Bidders :

The information to be filled in by Bidders in the following pages shall be used for purposes of eligibility as provided for in Clause 2of the Instructions to Bidders. This information shall not be incorporated in the Contract. Attach additional pages as necessary.

Section - IV
Bidding Forms

Letter of Bid

The Bidder must accomplish the Letter of Bid in its letterhead clearly showing the Bidder's complete name and address.

Date: ……
Name of the contract: ……
Invitation for Bid No.: ……

To: ……

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents.
(b) We offer to execute in conformity with the Bidding Documents the following Works:
(c) The total price of our Bid, excluding any discounts offered in item (d) below is:……
(d) The discounts offered and the methodology for their application are:……
(e) Our bid shall be valid for a period of 45 days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
(f) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Document;
(g) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed;
(h) We declare that, we have not been black listed and no conflict of interest in the proposed procurement proceedings and we have not been punished for an offense relating to the concerned profession or business.
(i) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive; and
(j) If awarded the contract, the person named below shall act as Contractor's Representative:
(k) We agree to permit the Employer/DP or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by the Employer.

Name: ……

In the capacity of ……

Signed ……

Duly authorized to sign the Bid for and on behalf of ……

Date ……

Bid Security

Bank Guarantee

Bank's Name, and Address of Issuing Branch or Office
(On Letter head of the Commercial bank or any Financial Institution eligible to issue Bank Guarantee as per prevailing Law)

Beneficiary: ..... name and address of Employer…….
Date:……
Bid Security No.:.....

We have been informed that . ……. .[***insert name of the Bidder***] (hereinafter called "the Bidder") intends to submit its bid (hereinafter called "the Bid") to you for the execution of …….. name of Contract …… under Invitation for Quotations No. …… ("the IFQ").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we……. . name of Bank. ……hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of. . ……..amount in figures …… (. ……..amount in words ……) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

(a) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or
(b) having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the performance security, in accordance with the ITB.
(c) is involved in fraud and corruption in accordance with the ITB

This guarantee will remain in force up to and including the date ……number……days after the deadline for submission of Bids as such deadline is stated in the instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not letter than the above date.

This Bank guarantee shall not be withdrawn or released merely upon return of the original guarantee by the Bidder unless notified by you for the release of the guarantee.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.

. . .Bank's seal and authorized signature(s) . . .

Note:

The bid security of ……. has been counter guaranteed by the Bank ……..on ……. ……. …… (Applicable for Bid Security of Foreign Banks).

Section - V
Works Requirements

Scope of Work

Specifications

Notes on the Specifications

A set of precise and clear specifications is a prerequisite for Bidders to respond realistically and competitively to the requirements of the Employer without qualifying or conditioning their Bids.The specifications must be drafted to permit the widest possible competition and, at the sametime,present a clear statement of the required standards of workmanship, materials, and performance of the goods and services to be procured. Only if this is done will the objectives of economy, efficiency and fairness in procurement be realized, responsiveness of Bids be ensured, and the subsequent task of bid evaluation facilitated. The specifications should require that all goods and materials to be incorporated in the Works be new, unused, of the most recent or current models, and incorporate all recent improvements in design and materials unless provided otherwise in the Contract.

Samples of specifications from previous similar projects are useful in this respect. The use of metric units is encouraged by the Funding Agency in case of funding assisted projects. Most specifications are normally written specially by the Employer or Project Manager to suit the Contract Works in hand. The available standard specification of works of Ministry of Physical Infrastructure and Transport, DoLIDAR and Other line Ministries can be adopted for respective civil construction works.

There are considerable advantages in standardizing General Specifications for repetitive Works in recognized public sectors, such as highways, urban housing, irrigation, and water supply, in the same country or region where similar conditions prevail. The General Specifications should cover all classes of workmanship, materials, and equipment commonly involved in construction, however it may not necessarily be adequate to be used in a particular Works Contract and may necessitate preparation of Particular (Special) Specifications to amend and or supplement the provision of the General Specifications to meet the requirement of the particular Works.

Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for goods, materials, and workmanship, recognized international standards should be used as much as possible. Where other particular standards are used, whether national standards of Nepal or other standards, the specifications should state that goods, materials, and workmanship that meet other authoritative standards, and which ensure substantially equal or higher quality than the standards mentioned, will also be acceptable.

Employers should decide whether technical solutions to specified parts of the Works are to be permitted. Alternatives are appropriate in cases where obvious (and potentially less costly) alternatives are possible to the technical solutions indicated in the Procurement Documents for certain elements of the Works, taking into consideration the comparative specialized advantage of potential bidders. For example:

The Employer should provide a description of the selected parts of the Works with appropriate references to Drawings, Specifications, Bill of Quantities, and Design or Performance criteria, stating that the alternative solutions if applicable shall be at least structurally and functionally equivalent to the basic design parameters and specifications.

Such alternative solutions shall be accompanied by all information necessary for a complete evaluation by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, proposed construction methodology, and other relevant details.

Sample Clause: Equivalency of Standards and Codes Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national, or relate to a particular country or region other authoritative standards that ensure a substantially equal or higher quality than the standards and codes specified will be accepted subject to the Project Manager's prior review and written consent. Differences between the standards specified and the proposed alternative standards shall be fully described in writing by the Contractor and submitted to the Project Manager at least 30 days prior to the date when the Contractor desires the Project Manager's consent. In the event the Project Manager determines that such proposed deviations do not ensure substantially equal or higher quality, the Contractor shall comply with the standards specified in the documents.
These Notes for Preparing Specifications are intended only as information for the Employer or the person drafting the Procurement Documents. They should not be included in the final documents.

Scope of Work

Improvement of Water production and distribution for Tu, Shivalaya, Kalo Tank area and Tyangla.

A. TECHNICAL SPECIFICATION FOR EARTHWORK IN EXCAVATION/BACKFILL

1. General

1.1 All work shall be executed accurately to the dimensions indicated on the drawings or as directed by the Engineer.

1.2 The contractor is responsible for inspecting, testing and making his own decision as to the actual nature of the ground to the excavated and any available trail hole data must not be Taken as a guarantee that similar conditions prevail on the site.

1.3 The contractor shall advice the Engineer when trail pits or trial hole data are available for examination so as to determine the bearing ability of the ground for foundation.

1.4 The contractor shall report to the Engineer when excavations are ready to receive foundation concrete and shall obtain consent before depositing concrete.

1.5 In the event of excavations being made larger than the sizes indicated on the drawings or as directed by the Engineer. The contractor shall fill in the excavated void to the correct profile with mass concrete a5t his own expenses and as directed by the Engineer.

2. Site Clearance

2.1 The sites of structures shall be cleared of all trees, bushes, scrubs, crops and all other vegetable growth including grubbing up all roots rubbish and grubbing matter shall be burned or disposes of, off site at tips to the provided by the contractor and approved by the Engineer. All combustible materials and excavated surface soil shall be spread and followed for the disposal.

2.2 All attempts must be made to maintain those trees and shrubs which are identified and instructed by the Engineer as the ones to be retained and to disturb plant life as little as possible. Where large shrubs and trees are positioned at our very near the location of a building, fence or any alternative structures or positions for structures considered.

2.3 The Contractor shall clear the working strip as per instruction of site in-charge. The working strip shall be an area of sufficient width along the route of the pipeline to ensure that his construction operations are not hampered and damage to buildings and the environment is minimized.

3. Excavation

3.1 The length of pipe trench excavated by a gang shall be as per the Clause 3.1.5.3. The width of the trench shall provide at least the appropriate side allowance (within trench supports, if any) as specified in Clause 3.1.5.2 above, and such that half of the base width is on either side of the designated centreline of the pipe. The sides of each trench from the bottom up shall be vertical as possible. When cutting through bituminous surfaces, the edges of the existing bitumen base and/or wearing courses shall be cut back vertically to straight lines.

All trenches shall be braced and strutted to the satisfaction of the Engineer, if they are.

a) so close to a building or structure, that a line between the corner of the trench bottom nearest to the building and the underside of the foundation of the building or structure would be steeper than 450

b) if the soil conditions are not providing sufficient stability to the side walls.

The Contractor will be responsible for any damage resulting from trench instability and insufficient bracing and strutting. During the course of the Works the Contractor shall clean road surfaces and other paved areas used by his vehicles and employees to minimize disturbance to residents and road users,

cleaning shall be to the satisfaction of the Engineer.

3.2 Maximum base width

The base width of a trench shall be as per instruction of site Engineer. Where two or more pipes are to be placed in one trench, the base width of the trench shall be no less than the sum of the external diameters of the pipe barrels plus the side allowance for each outer pipe plus, between each pair of adjacent pipes, the average of the side allowance for each pipe.

3.3 Maximum Length of open Trench per Gang

Except by special permission of the Engineer, only that length of trench excavation shall be permitted in advance of the pipe jointing, such that laying and jointing of pipes can reasonably be expected to be completed and the trench refilled not later than 7 days after excavation of trench. The contractor will not permit to keep trenches open for unduly long period, creating public hazards. The Engineer's decision in this respect shall be final.

3.4 Widening Trench at Joints Etc

Any widening or deepening of the trench, whether in ordinary soil or rock, necessary to accommodate curves, joints or bends as shown on the drawings or ordered by the Engineer shall be carried out by the Contractor, after taking all the necessary safety measures.

3.5 Over-Excavation of Trench Bottoms

All excavation carried below the grades shown on drawings or bottom (limit depth of excavation) of the bedding shall be refilled with sand / concrete at the Contractor's expense

3.6 Trench bottom

Material that the Engineer considers to be unsuitable at the bottom of the trench shall be excavated to the depths directed and disposed of in the manner described. The resulting space shall be refilled, as ordered, with approved material and compacted as directed.

Where the bottom of the trench has been loosened during excavation, it shall be compacted at OMC to 90 % of modified AASHTO maximum density prior to bedding and pipe laying. Bottoms of the excavated trenches shall be trimmed flat and levelled to provide an even base for the pipeline or pipe bedding; rocks, debris or other extraneous matter that may damage the pipes shall be removed.

Where pipes are to be laid on formation made in undisturbed ground (i.e. without bedding), the Contractor shall ensure that excavation in the first instance is stopped 75 mm above formation level and the trimming the formation shall be done by hand immediately prior to starting the laying of the pipes.

Where granular or concrete beddings are required, bottoms of trenches shall be excavated to a depth below the proposed level of the pipe over the full width of the trench as shown in the Drawings.

The depth of the trench shall be such that the depth of the cradle can be placed under the pipeline, and the trimming and grading of the bottom of the trench shall be such that the barrel of each length of pipe can be uniformly supported over its full length, free at the joints, and at the correct grades and levels.

The bottom of pipe trenches shall be sufficiently straight to enable the pipe to be laid without reduction of the trench width given and in conformity with the applicable tolerances specified.

4. Backfilling

Backfilling of pipe trenches shall commence as soon as possible after the pipe has been laid and firmly bedded in the specified cradle and the blanket has been placed over the top of the pipe to the height of blanket cover specified.

Backfilling shall be carried out as described below and over the full extent of the actual trench excavation and to original ground level, except where otherwise directed.

Unless the Contractor is authorized by the Engineer to use other material, the material for backfilling above the bedding (cradle and blanket) shall be obtained from trench excavations.

Unless prior approval has been obtained, no filling shall be placed in water.

Hard and rock material shall be incorporated in the backfill above the bedding only to the extent approved. Depending on the quality of the material, the Engineer may direct that it shall be suitably mixed with other backfill material.

Excavated material from the trench, which is unsuitable or has become surplus because of bulking, displacement by the pipe and importation, shall be disposed of as approved by the Engineer.

Any deficiency of backfill material from trench excavations because of removal of organic or other unsuitable material shall be made up from suitable surplus material from other excavations on the Site. If, insufficient or no suitable material is available for this purpose from such excavations, the Contractor shall import sufficient suitable material. The Contractor shall so arrange his work that the importation of backfill material is kept to a minimum.

The Contractor shall complete backfilling of trenches expeditiously and in reasonable lengths.

5. Compaction

In normal areas backfill shall be in accordance with specification.

In areas subject to traffic loads, trenches shall be backfilled with selected fill material in layers of thickness (after compaction) not exceeding 150 mm and the material shall be compacted to at least 95 % of modified AASHTO maximum density up to the top of the subgrade level.

6. Reinstatement of surfaces

In all cases, the Contractor shall, if ordered, reinstate surfaces over the full extent of the top of the actual excavation.

On private properties or other unsurfaced areas, the top 100 mm layer of each trench that will not be subject to road traffic loads shall be of such topsoil as is available in addition to soft material from excavations. The finished surface of backfilling, after appropriate compaction and that is left raised of the surrounding ground to allow for initial settlement, shall not be more than 150 mm above the surrounding ground.

In case of gravel roads or similar surfaced areas, the Contractor shall, immediately after completion of the backfilling to the top of the subgrade level, reinstate the road surface by filling the reminder of the trench with a well-graded and approved hard-wearing gravel surface of thickness at least 200 mm, and of quality equal to that of the existing road surface compacted to at least 95% modified AASHTO density. The gravel layer shall be finished with a slight camber in order to allow for initial settlement but shall not be shaped such as to cause excessive jolting of any vehicle proceeding with normal speed.

If the surface of a road with a stabilized base has been disturbed, the base shall be replaced with crusher run base compacted with sufficient moisture to give a density of at least 98 % modified AASHTO maximum density.

Except if otherwise ordered by the Engineer, the surface of a bitumen road shall be reinstated with asphalt of at least the thickness used in the original state. The base material shall be graded to a level sufficiently below the final road surface to allow the bitumen surfacing to be accommodated, and the edges of the existing bitumen wearing course shall be cut back vertically to a straight line. Before the bituminous construction is commenced, all loose materials and dust shall be removed and after approval, the surface shall be prime coated at the rate of 1.0 l/m^2 of MC30 cutback bitumen. The bituminous surface will have a tolerance of ±6 mm after compaction.

The Contractor shall maintain the reinstated surfaces and shall make good at his own expense, any damage due to any subsidence, pothole or any other unevenness during the period of the contract or during the defects liability period.

Where, during the execution of the activities, if any other road or paved surface (other than the right-of way or road in which the pipeline is laid) has been damaged in any way whatsoever by the Contractor's equipment, he shall, at his own expense and as soon as is practicable, repair and restore such surface to a condition at least equivalent to that previously existing, and to the satisfaction of the Engineer and the concerned authority.

7. Keeping Excavations free from water

The contractor shall be responsible for keeping all excavations free from water from whatever cause arising and shall provide such pumping capacity and other temporary works as may be necessary for this purpose.

8. Measurement and Payment

Payment for work under this Clause will be made on the basis of contract unit price indicated in the BOQ. The payment will be full and final compensation for all material, labour, and equipment to complete the works as specified

B. TECHNICAL SPECIFICATION FOR PIPES/FITTINGS

1. HDPE PIPES

These specifications are for pipes diameter up to 630 mm.

Providing and supplying in standard length High Density Polyethylene (HDPE) pipes suitable for potable water as per IS specification 4984/1995 or equivalent standards.

The item shall be covering manufacturing, supplying and delivery of HDPE pipes having material grade PE100 bearing IS4984/1995 or equivalent standards and its latest version or amendments. The HDPE pipes shall be supplied in standard length or as specified herein. However, at least all the requirements mentioned herein as per 4984/1995 shall be fulfilled if the supplied pipes are manufactured according to other than Indian Code of Standard.

1.1 Grade of Material

Raw material used to manufacture the HDPE pipes shall be virgin compounded or Natural black PE 80 resin confirming to IS4984:1995, IS7328:1992 and ISO4427:1996. The resin proposed to be used for manufacturing of the pipes should also comply with the following norms as per ISO 9080:1992:

- The resin should have been certified by an independent laboratory of international repute for having passed 10,000-hour long term hydrostatic strength (LTHS) test extrapolated to 50 years to show that the resin has a minimum MRS of over 10MPa. Internal certificate of any resin manufacturer will not be acceptable.
- Certificate for having passed the full-scale rapid crack propagation test as per ISO 13478. (iii) The resin grade for PE 100 shall be 46GP003.

1.2 Pressure Rating

The pressure rating of HDPE pipes and specials shall be of PN 6 confirming to clause 3.3 of IS 4984.

1.3 Color of pipes

The Color of the HDPE pipe shall be confirming to clause 4 of IS4984:1995 or clause 3.1.2, 3.1.3 and 3.2 of ISO4427:1996.

1.4 Dimensions

The pipes up to diameters 63mm shall be supplied in coils of 100m length. The coils shall be as per the provisions of clause 6.5 of IS4984:1995. Pipe beyond 63mm shall be supplied in straight lengths of minimum 6m to 12m as per Engineers instructions.

The internal diameter, wall thickness, length and other dimensions of pipes shall be as per relevant tables of IS: 4984 for different class of pipes. Each pipe shall be of uniform thickness throughout its length. The wall thickness of the PE80, PN 6 pipes shall be as per the table given below:

Nominal Dia of HDPE Pipe (mm)	Wall Thickness (mm)	
	Minimum	Maximum
63	2.9	3.4
75	3.5	4.1
110	5.0	5.7
160	7.3	8.3
200	9.1	10.3
315	14.4	16.1
400	18.2	21.2

The dimension tolerances shall be as per IS: 4984.

1.5 Performance requirements

The pipe supplied should have passed the acceptance tests as per clause 9.2 of IS4984:1995. The

manufacturer should provide the test certificates for the tests conducted, as required in clause 9.2 of IS4984:1995 along with the supply of pipes. These tests can be performed in the in-house laboratory of the pipe manufacturer or at an approved laboratory.

1.6 Marking

As per the provisions of clause 10 of IS4984:1995, each straight length of the pipe shall be clearly marked in inedible ink/ paint on either end and for coils at every 5m the following information:

- The manufacturer's name and/ trade mark
- Designation of the pipe as per IS or equivalent code iii. Lot number/ Batch number

1.7 Fittings / Specials

All HDPE fittings/ specials shall be molded for lower diameter up to 200mm dia and fabricated for other diameter in accordance with IS: 8360 (Part I & III). PE Injection molded fittings shall be as per IS: 8008 (Part I to IX). All fittings/specials shall be fabricated or injection molded at factory only. No fabrication or molding will be allowed at site, unless specifically permitted by the Engineer.

Fittings will be Butt welded on to the pipes.

The Supplier shall submit to the Engineer a detailed installation guideline/procedure, in accordance with the fitting manufacturer's recommendations. This should include safety procedures, tools/equipment required, staff requirements including list of names of qualified electrofusion operators, pre-installation requirements, installation steps, fault rectification, inspection and process documentation as discussed above.

1.8 Jointing

All pipelines shall be jointed in accordance with the manufacturer's instructions and to the approval of the Engineer.

Until required for incorporation in a joint, each rubber ring or gasket shall be stored in the dark, free from the deleterious effects of heat or cold, and kept flat so as to prevent any part of the rubber being in tension.

All pipes with flexible joints shall be accurately marked prior to laying to ensure that the correct gap is left in the joint.

In the jointing of pipes with flanges, special care shall be taken to align, grade, and level the pipes, specials, and valves to avoid straining of the flanges. All bitumen and paint shall be removed from the mating face of each flange immediately before jointing. Bolts shall be tightened up evenly in opposite pairs to ensure uniform bearing, the final tightening shall be to the torque specified by the manufacturer.

Care shall be taken to avoid damage to the internal surface of the pipes during assembly of the pipeline.

Once joints are made they shall be protected to a level appropriate for the pipe by: polyethylene sleeving, muffs, or with molding putty and tape wrapping.

Pipes shall be laid to the lines and grades given in the plans, with the ends abutting to form an even joint without shoulders or unevenness of any kind along the invert of the pipes. No joint shall be made under water. The ends of the pipes shall be dry and kept clean before and during laying and jointing operations.

All joint work shall be done in an approved manner by skilled workmen so that the completed pipeline shall have a continuous, smooth and uniform interior surface. Extruded joint material shall be removed from the interior of the pipe. In cold weather, protective measures must be taken to ensure a satisfactory joint.

Jointing for pipes and fittings / specials shall be done in accordance with the relevant Specifications

depending on type of pipes being used.

1.9 Cutting of Pipes

Pipes shall be cut by a method which provides a clean square cut of the pipe and of the lining, without damage to pipe or lining. All cut or trimmed ends and the parts of any pipe on which the coating may have suffered damage shall be re- coated as specified before the pipes are laid.

The external area at cut spigot ends of ductile iron pipes shall be ground smooth for a distance of at least 125 mm and then chamfered or otherwise made suitable for jointing as recommended by the pipe manufacturer.

2. HDP FITTINGS

All HDP fittings shall be manufactured by Injection Moulding Process in accordance with IS:8008 (Part I-VII)-1976 or equivalent to join HDP pipes to IS:4984-1978 or equivalent. All fittings shall be moulded from a compound consisting of virgin polyethylene in which carbon black and suitable non-toxic anti-oxidant are evenly dispersed and shall be suitable for butt-welding at fusion temperature 200°-220°C. All HDP fittings shall conform corresponding to working pressure rating of 10kg/cm2 fittings supplied must have a clear marking indicating the relevant pipe size(s) indelibly on each item.

3. VALVES

GENERAL-All valves shall be manufactured to an internationally recognized standard and full details concerning such standards shall be provided by the manufacturer for approval before manufacture commences. Where British or Indian Standards are quoted in this specification an equivalent internationally recognized standard is acceptable. Cast iron shall have properties not inferior to those specified for Grade 14 of BS 1452 or equivalent and shall withstand the test pressure specified. All castings shall be carefully cleaned and dressed off. No stopping or plugging will be permitted in the case of holes or flaws appearing therein, and casting shall be made from first running. Gunmetal and bronze shall be of such compositions as have been proved in actual service to be the most suitable for the particular purpose. If any casting, forging, bearing or other part should prove to be defective, the Engineer shall have the power to reject it and the Supplier shall replace it at no extra expense to the Engineer.

4. INTERCHANGEABLE COMPONENTS

All similar equipment shall be strictly interchangeable as a whole and as regards their component parts as per instruction of site in-charge only.

5. PROTECTION AGAINST CLIMATIC CONDITIONS

Valves supplied shall be of the appropriate grade and quality for and shall be adequately protected against the tropical climatic conditions. The supplier shall take those conditions into account in deciding what grade, quality and protection is required. Cast iron and steel surfaces of all valves, hydrants, and fittings shall be painted with at least two coats of approved bituminous paint. Failure to comply with the requirements of the above will result in rejection by the Engineer. Valve bodies, protecting tubes, surface boxes and all other casting shall be coated in accordance with BS 5163 or equivalent, for tropical conditions. Where this is not applicable, they shall be thoroughly cleaned and given one coat of bituminous paint. Machined surfaces shall be covered by a suitable rust inhibitor, such as a high melting point grease of approved quality. All submerged moving parts of the valves, or the pins and spindles etc of submerged moving parts or faces etc in contact with them shall be of non –corrodible materials. Any parts that show signs of corrosion or wear during the Period of Liability shall be replaced by non – corrodible material of special quality for the purpose at no extra expense to the Engineer. Care shall be exercised in the choice of metals for use in the valves to reduce the effects of bi-metallic corrosion to a minimum. The foregoing shall apply also to the moving parts of valves exposed to the weather.

6. WORKS TESTS

All valves shall be hydrostatically tested at the place of manufacture to the pressures specified and valves shall satisfactorily pass the specified tests before they are packed

For delivery. All valves shall be body tested to twice the working pressure stated in the Bill Of Quantities. Seat tests to the working pressure stated in the Bill of Quantities shall be carried out on all sluice valves and stop valves. All sluice valves and stop valves shall be subjected to "open end" test in accordance with BS 1218 or equivalent and each valve shall be subjected to three separate hydrostatic tests as follows:

6.1 Seat Tests

The tightness of seats shall be tested as follows: with the wedge closed and with the valve fixed at one end only the test pressure shall be applied to one face of the wedge, The other face being at atmospheric pressure. There shall be no visible leakage past the wedge at the hydrostatic test pressure (gauge) specified;

The above procedure shall be repeated but with the valve fixed at the other end and with the pressure applied to that end of the valve. (b) Body Test With the wedge open the test pressure (gauge) specified shall be applied to the whole body of the valve. There shall be no visible leakage. The test durations for all tests shall be as in the table below:

NOMINAL DIAMETER MM	MINIMUM TEST DURATION (MINUTES) FOR	
	BODY	SEAT (IF APPLICABLE)
50 and under	0.25	0.25
65 to 150	1	1
200 to 300	2	2

All valves shall be marked with east –on or stamped lettering stating the body test pressure in meters head of water. The cost of testing shall be included in the contract rates.

7. VALVES GENERALLY

Valves shall have adequate provision for lubrication, shall cause the minimum of head loss In the open position and shall seal the water passage completely when shut. All valves shall be closed in a clockwise direction unless otherwise specified. Direction of closing to be shown on the hand wheel. All valves shall be suitable for use with water in the temperature range - 10°C to 70°C and for working pressure of 10 bar or as otherwise specified. Each flanged valve shall be supplied complete with nuts, bolts, washers, and Joint rings. Joint rings shall be of that section complying with BS 4190 or equivalent and shall not extend beyond the inner edges of the bolt holes. Bolts and nuts shall be hexagonal complying with BS 4190 or equivalent. All materials which may come in contact With raw or potable water shall be free from toxic substances and shall not foster microbiological growth or give rise to taste, cloudiness or discolouration of the water with which they are or could be in contact. Rubber used in valves shall be ethylene propylene rubber (EPDM or EPM) or styrene butadiene rubber (SBR), which complies with the above requirements, and is suitable for making a long term flexible seal and is resistant to mechanical, chemical, or bacteriological attack leading to deterioration of the flexible seal

8. AIR VALVES

Single orifice air valves shall be of cast iron body, reliable in action and shall operate in such a manner that the balls of the valves cannot be held against the orifice by air pressure alone. Each air valve shall be Supplied with an approved isolating device. The inlet shall be male screwed 15 mm diameter suitable for connection to a GMS riser pipe. Max I mum operating pressure will be 1 00 meters head of water

9. MARKING AND PACKING

Each valve shall be indelibly marked with the diameter, weight and pressure rating and shall in addition carry

a unique reference number to enable each item to be clearly identified to works fabrication records, works test certificates, delivery notes and the like. All valves shall bear the authorized Standard mark cast on showing to which Standard specification they have been manufactured. Whenever possible the identification marks except for the "Standard mark" shall be painted on the outside of the item but where there is insufficient smooth surface area to accommodate the identification marks they shall be put on rust proofed metal tags secured to the item with galvanized wire. Flanges shall be protected with wooden discs attached by service bolts or other approved means. Service bolts shall not be incorporate ed in the works. All items shall be properly prepared and packed for delivery and shipping. In particular, small items such as small valves, parts of operating gear, bolts, nuts, gaskets, and other joint components shall be crated for delivery. Each crate shall contain a detailed packing list in a waterproof envelope. The outside of the crate shall bear a general description of the contents and identification mark relating it to the detailed packing list. All valves and fittings shall be securely packed in crates or boxes for protection against damage during transit. The costs of packing shall be included in the contract rates. None of the packing will be returnable.

10. Gl Valve Key

The Valve Box Keys shall be manufactured according to sample or drawing made available to the manufacturer. Valve Boxes Keys to be manufactured of light duty pipe conforming to Nepal Standard NS:199 -2046 or Indian Standard IS: 1239 (Part I) – 1990 or equivalent. Other required reducers shall conform to IS: 1879 – 1987 or equivalent.

11. Cl Manhole Cover and Frame

Cl Manhole cover and frame shall be manufactured as per drawing or samples made available to the manufacturer conforming to NS: 104 o 2042 or IS: 1726 of latest Edition or equivalent. Cl manhole covers and frames are to be Provided and fixed on the top RCC slab as per drawing with minimum 100mm thick M150 RCC. The Cl manhole cover shall be laid as such so that top of the manhole cover should be the same of the top of the road surface or finished level of Manhole shall match with the finished level of surrounding structure. The Cl manhole cover shall be measured In numbers unless otherwise mentioned in the BoQ The rate shall include cost of material, transportation, laying , fixing and other necessary associated parts including necessary form works, PCC, reinforcement, curing, etc as instructed by the Engineer

Any materials uncovered in above specifications will be as per the instruction of Site Engineer.

C. TECHNICAL SPECIFICATION FOR CONSTRUCTION AND WORKMANSHIP FOR HDPE PIPES/FITTINGS

1. Preparation of Pipes

HDPE pipes shall be joined to form a string above ground prior to snaking into the trench. To prevent scoring, pipe rollers should be used.

Before lowering HDPE pipelines into the trench, a check should be made for cuts, deep scratches or other pipe damages and in fusion jointed systems that the system has cooled sufficient before stress is imposed upon any pre- made joints.

When lowering pipe into the trench, care should again be taken to avoid scoring of the pipe by contact with the sides and bottom of the trench. Use should be made of planks and ropes where appropriate, but wire ropes or chains should not be used.

2. Laying of Pipes

Gradual changes in direction of HDPE pipelines can be accommodated by pipe deflection but every effort should be made to keep the pipe at the center as possible within the trench to enable adequate compaction of side-fill.

HDPE pipes and fitting may be partially or completely surrounded by concrete but they should be protected to avoid possible damage during pouring or compaction to prevent high localized stresses.

After completion of an installation, pipe work and fittings should be inspected and made2 ready for testing to ensure the safety and efficiency of the systems. The trench may be backfilled prior to testing; but it is advisable to leave at least the joints exposed throughout the test.

Complete and accurate records should be taken of the installation. It is useful for records to be taken before the pipes are buried.

3. Connection to HDPE Pipe

3.1 Jointing

Pipe joining for pipes buried underground, below pavement or slab or concealed in slab shall use Butt Welded jointing (Saddle Jointing). Unless instructed otherwise by the Engineer or mentioned in BOQ jointing of HDPE pipes and fittings shall be done by fully automatic butt fusion jointing.

3.2 Butt Fusion

Electrical heated plate shall be used in the process of welding HDPE pipes and fittings in butt fusion jointing. Only pipes and fittings of the same material type, size and rating shall be butt welded, e.g. PE 100 pipes should not currently be welded to PE 80 pipes. PN 10 pipe should not be welded to PN 6 pipe or fitting. Jointing between HDPE pipes and specials shall be done as per the latest IS: 7634 part II or equivalent code. Wherever necessary the Contractor shall use automatic or semi-automatic, hydraulically operated, superior quality electro fusion machines which will ensure good quality electrofusion welding of HDPE pipes.

4. Pressure and Leakage Test

All newly installed pipelines and old pipes for connection to the new system must undergo sectional pressure and leakage testing prior to final acceptance. This memorandum provides recommended standards for pressure and leakage testing HDPE water lines. Simultaneous or separate pressure and leakage tests should be performed. The test duration and pressures for each option are specified in table below. If separate tests are made, the pressure test should be conducted prior to the leakage test. Pressure and Leakage Test Methods

Procedure	Test Pressure	Duration of Test
Simultaneous Pressure & Leakage Test	150% of working pressure* at the point of test, but not less than 125% of normal working pressure at the highest elevation	2 Hours
Separate Pressure test	150% of working pressure* at the point of test not less than 125% of normal working pressure at highest elevation	1 Hour
Separate Leakage Test	150% of working pressure* of segment tested	2 Hours

Note: working pressure is defined as the maximum anticipated sustained operating pressure. However, in no case shall the test pressure exceed the pressure rating for the pipe, valves, appurtenances, or thrust-restraints.

The purpose of the pressure test is to locate defects in materials or workmanship. Before testing, the pipeline must be backfilled and braced sufficiently to prevent movement under pressure.

A pressure test should be conducted at 150% of the working pressure in the line. The working pressure is defined as the maximum anticipated sustained operating pressure in the line being tested. Care must be taken not to exceed the pressure rating of pipes, valves, fittings, thrust restraints, or other appurtenances. Pressures in the main may exceed the specified test pressure if the water pressure is read from a gauge located at a high point in the main.

D. TECHNICAL SPECIFICATION FOR PLAIN CEMENT CONCRETE

1. Scope

This specification deals with cement, concrete, plain or reinforced for general used and covers the requirements for concrete materials, their storage, grading, mix, design strength and quality requirements, pouring at all levels, reinforcements, protection, curing, formwork, finishing, painting, admixtures, inserts and other miscellaneous works.

The provision of the latest revision of IS: 456 shall be complied with unless permitted otherwise and any other Indian standard Code (latest revision) shall form a part of this specification to the extent it has been referred to or applicable within this specification.

2. Materials

2.1 Cement

Cement used shall be ordinary Portland cement conforming to IS: 269 latest revisions. Rapid hardening Portland cement can be used under special circumstances, if permitted by the Engineer.

2.2 Aggregates

All aggregates shall conform to all provisions and test methods of IS : 383 latest revision and/or IS : 515 latest revisions. Samples or aggregates, proposed to be used shall be submitted free of charge in sufficient quantities to the Engineer with sieve analysis data for his approval. Approved samples will be preserved by him for future reference. This approval will not in any way relieve the contractor of his responsibility of producing concrete of specified qualities.

2.2.1 Coarse Aggregates

Coarse Aggregates shall consist of uncoated, hard, strong, dense and durable pieces of crushed stone, and shall be free from undesirable matters, viz disintegrated stones, soft, flaky or elongated particles, salt, alkali, vegetable matter or other deleterious substances. The amount of different undesirable substances in coarse aggregates shall not exceed the percentage limits by weight as specified in relevant IS Codes, but in no case, the total amount of all the undesirable substances shall exceed 5%

Aggregates other than crushed stone conforming to the provisions of this specification may be used under special conditions, if permitted by the Engineer.

Washing of Aggregates by approved means shall be carried out, if desired by the Engineer at no extra cost to the Owner.

The maximum size of the coarse aggregates shall be as following: -

For

Reinforced concrete including foundations – 20 mm

Ordinary Plain concrete – 20 mm

Heavy mass concrete – 40 mm

Grading of coarse aggregates for a particular size shall generally conform to relevant I.S. Codes and shall also be such as to produce a dense concrete of the specified proportions and/or strength and consistency that will work readily into position without segregation.

2.2.2 Fine Aggregates – sand

Sand shall consist of siliceous material, having hard , strong, durable, uncoated particles, free from undesirable amounts of dust, lumps, soft or particles or other deleterious substances. The amount of different undesirable substances shall not exceed the percentage limits by weight as specified in relevant I.S. Codes, but in no case, the total amount of all undesirable substances

shall exceed 5% by weight.

Manufactured sand, other than natural sand, conforming to the provision of this specification may be used under special conditions, if permitted by the Engineer.

Washing of aggregates by approved means shall be carried out, if desired by the

Engineer at no extra cost to the Owner.

Coarse and fine sand shall be well graded within the limits by weights as specified in relevant I.S. Codes. Fineness modulus shall not vary by more than plus or minus 20 percent from that of the approved sample.

2.3 Water

Water shall be clean, fresh and free from organic or other deleterious matters in solution or in suspension in such amounts that may impair the strength of durability of the concrete. Potable water is generally satisfactory.

3. Admixtures

The use of admixture in concrete for promoting workability, improving strength, entraining, air or for any other purpose may be used only with the approval of the Engineer.

4. Formwork

Formwork shall be composed of steel and/or best quality shuttering wood of non- absorbent type. Timber shall be free from knots and shall be of medium grain as far as possible. Hard woods shall be used as caps and wedges under or over posts. Ply-wood or equivalent shall be used where specified to obtain smooth surfaces for exposed concrete work. Struts shall generally be mild steel tubes, and strong salwood.

5. Storage of Material

All materials shall be so stored as to prevent deterioration or intrusion of foreign matter and to ensure the preservation of their quality and fitness for the work. Any material, which has deteriorated or has been damaged or is otherwise considered defective by the Engineer, shall not be used for concrete, and shall be removed from site immediately, failing this, the Engineer shall be at liberty to get the materials removed and the cost thereof shall be realized from the contractor's dues.

6. GRADES OF CONCRETE

General

Concrete shall be either ordinary or controlled and in grades designated as M- 15, M-20 etc. as specified in IS:456. Lean concrete shall be 1:4:8 mix with aggregate of nominal size 40 mm maximum or as indicated in drawings.

6.1 Ordinary Concrete

Ordinary concrete is recommended only when accurate control is impracticable and not necessary. However, if ordinary concrete is allowed by the Engineer, it shall be used only in the concrete graded M-15 and M-20. Ordinary concrete does not require preparation of trial mixes.

6.1.1 Concrete mix proportions for ordinary concrete shall be as per IS : 456 and as following:-

TABLE – I

CONCRETE MIX PROPORTIONS FOR NOMINAL MIX CONCRETE

Grade of concrete	**Total Quality of Dry aggregates by Mass per 50 Kg. of Cement to be taken As the sum of Individual**	**Proportion of Fine Aggregates To coarse Aggregates (by Mass)**	**Quantity of Water per 50 Kg. of Cement (Max.)**
(1)	(2)	(3)	(4)
M-10	480 Kgs.	Generally 1:2 for Fine aggregates to Coarse aggregates By volume but subject	34 Liters
M -15	350 Kgs.		32 Liters

(Note : Regarding explanation to the above mix proportions, refer to Table – 3 of IS : 456)

6.1.2 In proportioning concrete the quantity of cement shall be determined by actual weight. The quantities of fine and coarse aggregates may be determined by volume, but preferably by weight. If fine aggregates are moist, allowance shall be made for bulking in case of volume batching and in accordance with IS : 2386 (Part-III). Allowance shall also be made for surface water present in the aggregates when computing the water content. The amount of surface water shall be determined by one of the field methods described in IS : 2386 (Part – III). All the above data shall be maintained properly to satisfaction of the Engineer.

6.1.3 The water cement ratio shall not be more than those specified above. The cement content of any nominal mix proportion specified above shall be increased if the quantity of waterin a mix has to be increased to overcome the difficulties of placement and compaction, so that the water – cement ratio specified above for a particular mix is not exceeded. No extra payment shall be made to the contractor for use of the extra cement.

6.1.4 If ordinary concrete made in accordance with the proportions given above for a particular grade does not yield the specified strength and fails to satisfy the requirements of "Acceptance Criteria for Concrete" as specified in IS : 456, the cement content shall be increased as directed by the Engineer to obtain a specified strength at no extra cost of the Owner. This richer mix shall continue until the Engineer instructs otherwise.

6.1.5 Ordinary concrete proportioned for a given grade specified above shall not, however, be classified as a higher grade on the ground that the test strength were found higher than the minimum specified.

6.2 Controlled Concrete

Controlled concrete shall be used on all concrete works, except where specified otherwise. Controlled concrete for use in plain and reinforced concrete structures shall be in grades M-15, M-25 etc. in IS 456-78.

6.2.1 The mix proportions foe all grades of concrete shall be designed to obtain strengths corresponding to the values specified herein-after for respective grades of concrete. Preliminary tests, as specified in the I.S. Code and required by the Engineer, shall be carried out sufficiently ahead of the actual commencement of the work with different grades of concrete made from representative samples of aggregates and cement expected to total quantity of fine and coarse aggregates and the water-cement ratio required to produce a concrete of specified strength and desired workability.

6.2.2 As a guide to perform the mix design properly, the relationship between water- cement ratio, aggregate to cement ratio, workability and strength of concrete are furnished in Table – II below :

TABLE – II (FOR GUIDANCE ONLY)

MIX PROPORTIONS (BY WEIGHT) EXPECTED TO GIVE DIFFERENT DEGREES OF WORKABILITY WITH DIFFERENT WATER-CEMENT RATIOS AND A SPECIFIED STRENGTH

Working ability	**Water/Cement Ratio**	**Compressive Strength in Cylinder in**	**Ratio by weight Of cement to 16 Gravel aggregate**		**Ratio by weight of Cement to crushed Stone aggregate**	
			20mm	**40mm**	**20 mm**	**40mm**
Very low Slump 0-25mm	0:4	360	1:4.8	1:5.3	1:4.5	1:5.0
	0:5	290	1:7.2	1:7.7	1:6.8	1:7.4
	0:6	220	1:8.5	1:8.6	1:7.8	1:8.4
	0:7	160	1:9.0	1:9.0	1:8.7	1:8.9
Low Slump 25-50mm	0:5	290	1:5.5	1:6.7	1:3.5	1:5.5
	0:6	220	1:6.8	1:7.1	1:6.3	1:7.0
	0:7	160	1:8.0	1:8.5	1:7.4	1:8.0
Slump 50-100mm	0:5	390	1:4.8	1:5.7	1:4.2	1:5.0
	0:6	220	1:6.0	1:7.3	1:5.2	1:6.2
	0:7	160	1:6.8	1:7.0	1:6.2	1:7.0

Notwithstanding anything mentioned hereinbefore, the maximum total quantity of aggregates by weight per 50 kg of cement shall not exceed 450 kg except where otherwise specifically permitted by the Engineer.

6.2.3 The minimum cement content for each grade of concrete shall be as per Table 19 of IS 456.

6.2.4 At least 4 trial batches are to be made, and 7 test cylinders taken for each batch noting the slump on each mix. These cylinders shall then be properly cured and two cylinders for each mix shall be tested in attesting laboratory approved by the Engineer at 7 days and others at 28 days for obtaining the ultimate compressive strength. The test reports shall be submitted to the Engineer. The cost of the mix design and testing shall be borne by the contractor.

6.2.5 On the basis of the preliminary test reports for trial mix, a proportion of mix by weight and water – cement ratio will be approved by the Engineer, which will be expected to give the required strength, consistency and workability and the proportions so decided for different grades of concrete shall be adhered to during all concreting operations. If, however, at any time, the Engineer feels that the quality of materials, being used has changed from those used for preliminary mix design, the contractor shall have to run similar trail mixes to ascertain the mix proportions and consistency. It will be within the Competency of the Engineer to reduce the number of trail batches and then number of test specimens mentioned above. Further, the Engineer can also allow adoption of the mixes already tried and found satisfactory, with similar materials, for other jobs at the same site, without any fresh design of the mix.

6.2.6 The mixes once approved must not be varied without prior approval of the Engineer. Should, however, the contractor anticipate any change in the quality of future supply of materials than that has been used for preliminary mix design, he shall inform the same to the Engineer and bring fresh samples sufficiently ahead to carry out fresh trail mixes. If permitted by the Engineer, contractor may test concrete cube specimens in place of cylinder specimens.

6.2.7 In designing the mix proportions of concrete, the quantity of both cement and aggregate shall be determined by weight. The engineer may allow the quantity of aggregates to be determined by equivalent volume basis after the relationship between the weight and volume is well established by trail and the same shall be in calibrated tanks or weighed.

6.2.8 All measuring equipment shall be maintained in a clean and serviceable condition, and their accuracy periodically checked.

6.2.9 To keep the water –cement ratio to the designed value, allowance shall be made for the moisture contents in both fine and coarse aggregates and determination of the same shall be made as frequently as directed by the Engineer. The determination of moisture contents shall be according to IS: 2386 (Part – III)

7. Strength Requirements

7.1 Where ordinary Portland cement conforming to IS:269 or Portland blast furnace slag cement conforming to IS : 544 is used, the compressive strength requirements for various grades of concrete shall be as shown in Table-III hereinafter. Where rapid hardening Portland cement is used, the 28-daycompressive strength requirements specified in Table– III shall be met in 7 days. The strength requirements specified in Table-III shall apply to both controlled concrete and ordinary concrete.

7.2 The characteristic strength of concrete shall be as per Table -2 of IS : 456 – 78.

7.3 Concrete work found unsuitable for acceptance shall have to be dismantled and replacement to be done as per specification by the contractor. No payment for the dismantled concrete, the relevant formwork and reinforcement, embedded fixtures, etc. Wasted in the dismantled portion shall be made. In the course of dismantling, if any damage is done to the embedded items or adjacent structures, the same shall be made good free of charge by the contractor to satisfaction of the Engineer.

7.4 Compressive strength requirement for different grades of concrete as specified in Table – III with reference to 15 cm diameter x30 cm high cylinder specimen or 15 cm x15cm cube specimen, as the case may be, shall have to be satisfied. Requirements for preliminary tests and works tests are specified separately.

TABLE-III
STRENGTH REQUIREMENT OF CONCRETE

Concrete	**For 15cm x 30 cm high Cylinder specimen**		**For 15 cm x 15 cm Cube specimen**	
	Preliminary Test	Work Test	Preliminary Test	Work Test
M-15	160	120	200	150
M-20	208	160	260	200
M-25	256	200	520	250

Grade of Min. Compressive strength at 28 days after mixing conducted in accordance with IS : 456 (in KG/cm²)

Other requirements of concrete strength as may be desired by the Engineer shall be in accordance with Indian Standard IS : 456.

8. Workability

8.1 The workability of the concrete shall be checked at frequent intervals by slump test. Where facilities exist and if required by the Engineer, alternatively the compacting factor test in accordance with IS : 1199 shall be carried out.

8.2 The degree of workability necessary to allow the concrete to be well consolidated and to be worked into the corners of formwork and round the reinforcement to give the required surface finish shall depend on the type and nature of structure and shall be based on experience and tests. The preferred limits of consistency for various types of structures, shall be as per CI. 6 and 6.1 of IS : 456.

9. Load Test

9.1 Load test of structural members may be required by the Engineer when the strength of job control cylinders/cubes fall below the required strength and is not acceptable as per "Acceptance Criteria " of IS : 456. If the load testing is decided by the Engineer, the member under consideration shall be subjected to a superimposed load equal to one and a quarter (1¼) times the specified superimposed load used for design and this load shall be maintained for a period of 24 hours before removal. The detailed procedure of the test is to be decided by the Engineer.

9.1.1 If the member show evident failure, such changes as are necessary to make the structure adequately strong shall be made by the contractor free of cost to the Owner. If, on the other hand, the failure becomes evident, the Engineer, under special circumstances (with the approval of the designer) , can retain the portion of the structure under test, provided suitable modification for strengthening and/or dispersion of design load is feasible. Cost of such modification or dispersion of load shall be borne by the contractor.

9.1.2 The member shall be deemed to have passed the test if the maximum defection at the end of 24 hours does not exceed the deflection given by the following expression: -

$$D = \frac{0.001L^2}{12t}$$

Where D = deflection

L = Length of the member, and

T = depth of the member

If the defection exceed "D" in the above formula and the member does not receiver at least 75% observed deflection within 24 hours of removal of load, the test loading shall be repeated after a lapse of at least 72 hours and the member shall be considered to have failed to pass the test, if the recovery after the second test loading is not at least 75% of the maximum deflection shown during the second test.

9.2 Load tests shall not be made until the expiry of 56 days of effective hardening of the concrete.

9.3 The entire cost of load testing shall be borne by the contractor. If a portion of the structure is found to be unacceptable, it shall be dismantled and replaced by a fresh structure as per specification. The cost of dismantling and the cost of concrete, formwork and reinforcement involved in the dismantling, any damage done to the embedded items and or other adjacent structures, the same shall be made good free of charge by the contractor to the satisfaction of the Engineer.

10. Workmanship

General

All workmanship shall be according too the latest and best possible standards. Before stating the pour the contractor shall obtain the approval of the Engineer in a "Pour card" maintained for this purpose. He shall obtain complete instructions about the material and proportion to be used, slump workability, quantity of water per unit of cement, number of test cylinders to be taken, type of finishing to be done any admixture to be added etc.

10.1 Concrete

10.1.1 Mixing of Concrete

The proportion of fine and coarse aggregate, cement and water shall be as determined by the preliminary tests of according to fixed proportions in case of ordinary concrete and shall always be approved by the Engineer. The quantities of fine and coarse aggregates shall be determined as specified hereinbefore. The quantity of cement shall always be determined by weight. The water shall be measured accurately after giving proper allowance for surface water present in the aggregate for which regular check shall be made by the contractor. Due allowance shall be made for bulking in case of volume batching in accordance with IS: 2386 (Part-III).

Concrete shall always be mixed in a mechanical mixer unless specifically approved by the Engineer for concrete to be used in unimportant structures. The water shall not be poured into the drum of the mixer until all the cement and aggregates constituting the batch are already in the drum and mixed for at least one minute. Mixing of each batch shall be continued until the mix is uniform in colour and consistency, but in no case shall mixing be done for less than two (2) minutes and at least forty (40) revolutions after all the materials and water are in the drum. When absorbent aggregates are used or when

the mix is very dry, the mixing time shall be extended as may be directed by the Engineer. Mixers shall not be loaded above their rated capacity as this prevents through mixing.

The entire contents of the drum shall be discharged before the ingredients for the next batch are fed into the drum. No partly set or remixed or excessively wet concrete shall be used and it shall be immediately removed from site. Each time the work stops, the mixer shall be thoroughly cleaned and when the next mixing commences, the first batch shall have 10% additional cement at no extra cost to the Owner to allow for loss in the drum.

When hard mixing is permitted by the Engineer for concrete to be used in unimportant structures it shall be carried out on a watertight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency. In case of hand mixing, extra cement @ 10% shall be added to each batch at no extra cost to Owner.

10.1.2 Conveying Concrete

Concrete shall be handled and conveyed from the place of mixing to the place of the final laying as rapidly as practicable, by approved means, before the initial setting of the cement starts. Concrete should be conveyed in such a way as will prevent segregation or loss of any of the ingredients. If segregation does occur during transport, the concrete shall be remixed. During very hot and cold weather, if directed by the Engineer, concrete shall be transported in deep containers which will reduce the rate of evaporation and loss of heat. Conveying equipment for concrete shall be well maintained and thoroughly cleaned before commencement of concrete mixing. Such equipment shall be kept free from set concrete.

10.1.3 Placing Concrete

Formwork and reinforcement shall be approved in writing by the Engineer before concrete is placed. The forms shall be well wetted and all shavings, dirt and water that may have collected at the bottom shall be removed before concrete is placed. Concrete shall be deposited in its final position without segregation, re handling or flowing. The interval between adding the water to the dry materials in the mixer and the completion of the final placing inclusive of compaction of the concrete shall be well within the initial setting time for the particular cement in use or as directed by the Engineer. As far as possible, concreting shall be placed in the formwork by means approved by the Engineer and shall not be dropped from a height or handled in a manner which may cause segregation. Any drop over 180 cm shall have to be approved by the Engineer. Once the concrete is deposited in its final position, it shall not be disturbed.

After the concrete as been placed, it shall be spaded and thoroughly compacted by approved mechanical vibration to a maximum subsidence without segregation and thoroughly worked around reinforcement or other embedded fixtures into the correct form and shape. Vibrators shall not be used for pushing and shoveling concrete into

adjoining areas. Vibrators must be operated by experienced men and over vibrations shall not be permitted. Hand temping in some cases may be allowed subject to the approval of the Engineer. Care must be taken to ensure that the inserts, fixtures reinforcement and formwork are not displaced or distorted during placing of concrete. No concrete shall be placed in open, while it rains. If there has been any sign of washing of cement and sand, the concrete shall be entirely removed immediately.

Suitable precautions shall be taken in advance to guard against rains before leaving the fresh concrete unattended. No accumulation of water shall be permitted on or around freshly laid concrete. Slabs, beams and similar members shall be poured in one operation normally. In special circumstances, with the approval of the Engineer, these can be poured in horizontal layers not exceeding fifty (50) cm. In depth. When poured in layers, it must be ensured that the under layer is not already hardened. Bleeding of under layer, if any shall be effectively removed. Moulding, throating, drip course, etc. shall be poured as shown on the drawing or as desired by the engineer. Holes shall be provided, and bolts, sleeves, anchors, fastenings or other fixtures shall be embedded in concrete as shown on the approved drawings or as directed by the Engineer. Any deviation there from shall be set right by the contactor at his own expense as- instructed by the Engineer.

10.1.4 Protection and Curing of Concrete

Newly placed concrete shall be protected by approved means from rain, sun, and wind. Concrete placed below the ground level shall be protected from falling earth during and after placing. Concrete placed in ground containing deleterious substances shall be kept free from contact with such ground or with water draining from such ground during placing of concrete and placing for a period of at least three days or as otherwise instructed by the Engineer. The ground water around newly poured concrete shall be kept to an approved level by pumping or other approved means of drains.

Adequate steps shall be taken to prevent flooding, steps, as approved by the Engineer, shall be taken to protect immature concrete from damage by debris, excessive loading, vibration, abrasion, mixing with earth or other deleterious materials, etc. that may impair the strength and durability of the concrete.

As soon as the concrete has hardened sufficiently for the surface to be marked, it shall be covered either with sand, hessian, canvas or similar materials and kept continuously wet for at least seven (7) days after final setting. This period may be extended, at the discretion of the Engineer, upto fourteen (14) days.

10.1.5 Control Tests and Concrete

For the concrete of a particular specified strength, at least ix (6) test cylinders, for each type of mix, shall be taken by the contractor for each 8 hours or less work for each medium sized mixing plant. If the volume of concrete poured is less than 20 M3 on any day per mixing plant. The engineer may exempt or reduce the number of test specimens at his discretion based on the past test reports. The sampling of concrete, making the test specimens, curing and testing procedure shall be as specified in IS :

456. The test specimens shall be 15 cm dia and 30 cm high. The contractor shall get the specimens tested in a laboratory approved by the Engineer and submit to the Engineer the test result s in triplicate within three (3) days of the test. The contractor shall carry out the sampling and testing according to the provisions of this specification at his own cost. No payment shall also be made for the concrete used in specimen.

To control the consistency of concrete from every mixing plants, slump tests shall be carried out by the contractor free of charge every two hours or as directed by the Engineer. The amount of mixing water shall not be changed without approval of the Engineer. Slumps corresponding to the test cylinders shall

be recorded for reference.

Before commencing the work or during the progress of the work, the Engineer, if so desires may order tests to be carried out on cement, sand or coarse aggregates, water, reinforcing steel or transverse tests on concrete specimens, or any other relevant tests in accordance with ISI recommendations.

The Engineer can suspend the work during the testing of any doubtful material. No claim for any consequent loss arising out of such suspension shall be entertained.

For testing concrete, if permitted by the Engineer, cube specimens may be tested in place of cylinder specimens.

10.2 Formwork

10.2.1 General

If it is so desired, the Contractor shall be prepare, before commencement of actual work, design and drawings for formwork and centering and get them approved by the Engineer. The formwork shall conform to the shape, lines and dimensions as shown on the drawings.

The centering shall be true and rigid and thoroughly braced both horizontally and diagonally, the forms shall be sufficiently strong to carry without undue deformation, the dead weight of the concrete as a liquid as well as working load. Where of the concrete is vibrated, the formwork shall be strong enough to withstand the effects of vibration without appreciable deflection, bulging, distortion or loosening of its components. The joints in the formwork shall be sufficiently tight to prevent any leakage or mortar. The formwork shall be such as to ensure a smooth uniform surface free from honeycombs, air bubbles, bulges, fins and other blemishes, Any blemish or defect found on the surface of the concrete must be brought to the notice of the Engineer immediately and rectified free of charge as directed by him.

To achieve the desired rigidity, tie bolts, spacer blocks, tie wires and clamps are approved by the Engineer shall be used but they must in no way impair the strength of concrete or leave strains or marks on the finished surface. Where there are chances of these fixtures being embedded, only mild steel or concrete adequate strength shall be used. Bolts passing completely through liquid retaining walls/slabs for the purpose of acquiring and aligning the formwork should not be used unless effective precautions are taken to ensure water tightness after removal.

For exposed interior and exterior concrete surfaces of beams, columns, and walls, plywood or other approved forms, thoroughly cleaned and tied together with approved corrosion-resistant devices shall be used. Rigid care shall be exercised in ensuring that all columns are plumb and true and thoroughly cross braced to keep them so. All floor and beam centering shall be crowned not less than 8mm in all directions for every 5 metres span. Unless described on the drawing for elsewhere to the contrary, beveled strips 25mm by 25mm shall be provided, without any extra charge, to form angles and in corners of column and beam boxes for chamfering of corners. Temporary openings for cleaning, inspection and for pouring concrete shall be provided at the base of vertical forms and at other places, where they are necessary and as may be directed by the Engineer. The temporary opening shall be so formed that they can be conveniently closed when required and must not leave any mark on the concrete.

10.2.2 Cleaning and Treatment of Forms

All forms shall be thoroughly cleaned of old concrete, wood shavings, saw dust, dirt and dust sticking to them before they are fixed in position. All rubbish, loose concrete, chippings, shavings, saw dust, etc. shall be scrupulously removed from the interior of the forms before the concrete is poured. Along with wire brushes, brooms, etc. compressed air jet and/or water jet shall be kept handy for the cleaning, if directed by the Engineer.

Before shutter is placed in position, the form surface in contact with concrete shall be treated with approved non-staining oil or composition. Care shall be taken that the oil composition does not come in contact with reinforcing steel or existing concrete surfaces. They shall not be allowed to accumulate

at the bottom of the shuttering.

The formwork shall be so designed and erected that the forms for slabs and the sides of beams, columns and walls may be removed first. Leaving the shuttering to the soffits of beams and their supports in position. If formwork for column is erected for the full height of the columns, one side shall be left open and built up in sections, as placing of concrete proceeds. Wedges, spacer bolts, clamps or other suitable means shall be provided to allow accurate adjustments of the formwork and to allow it to be removed gradually without jarring the concrete.

10.2.3 Removal of Forms

The Contractor shall record on the drawings or in the other approved manner, the date on which the concrete is placed in each part of the work and the date on which the formwork is removed there from and have this record checked and countersigned by the Engineer. The Contractor shall be responsible for the safe removal of the formwork, but the Engineer may delay the time of removal if he considers it necessary. Any work showing signs of damage through premature removal of formwork or loading shall be entirely re- constructed without any extra cost to the Owner.

Forms for various types of structural components shall not be removed before the minimum specified days as indicated in CI.10.3 of IS: 456-78 which shall also be subject to the approval of the Engineer.

10.2.4 Tolerance

The formwork shall be so made as to produce a finished concrete, true to shape, lines, levels, plumb and dimension as shown on the drawings subject to the following tolerances unless otherwise specified in this specification or drawings or directed by the Engineer.

For:

a) Sectional dimension - 5mm

b) Plumb - 1 in 1000 of height

c) Levels - 3 mm before any deflections has taken place

10.2.5 Re-use of Forms

Before re-use, all forms shall be thoroughly scraped, cleaned, joints etc. examined, and when necessary repaired, and inside surface treated as specified here in before. Formwork shall not be used/re-used, if declared unfit or unserviceable by the Engineer.

10.2.6 Classification

Ordinary

These shall be used in places where ordinary surface finish is required and shall be composed of steel and or approved good quality seasoned wood.

Plywood

These shall be used in exposed surfaces, where a specially good finish is required and shall be made mostly of approved brand of heavy quality plywood to produce a perfectly level, uniform and smooth surface. Re-use may only be permitted after special inspection and approval by the Engineer. He may also permit utilization of used plywood for the “ordinary” class.

11. Rate

The rate for any item in the schedule, unless specifically excluded in the contract, shall be deemed to include the cost of all materials consumed or used in the work or incidental to it as well as labour, tools, plants, equipment, template, supports, scaffolds, approaches, security and security measures, power, fuel, lubricants, storage, handling, transport, testing, insurance, taxes, royalties and other revenue expenses, accommodation, services supervision, overheads, profits, etc. The various items of work which are to be provided are

mentioned under clauses 1.01.00 and elsewhere in this specification. If no separate item is provided for any such work in the schedule of item it is implied that the Contractor shall not claim for any extra item but shall include the cost of all such work in the rates of the connected items of the schedule viz. detailed drawings and bar banding schedule in the item of reinforcement, design and drawing of formwork in the item of formwork or concrete, etc.

12. Method of Measurement

12.1 Concrete

Actual volume of work as executed or as per drawings issued, whichever is less shall be measured by volume. Deduction for openings, conduits, pipes, ducts, pockets, chases, etc. shall be made provided they are larger than 0.1 Sq.M. in area each.

No deduction shall be made for embedded fixtures including reinforcement, sleeves, anchor bolts and similar items.

12.2 Formwork

a) Formwork for different types shall be measured as the actual surface in contact with the concrete and paid on area basis unless included in the rate for concrete.

b) Formwork shall not be measured separately for precast concrete work and concrete perforated units, which shall be included in the respective rates.

c) No payment for formwork or any other requirements in construction joints shall be made.

d) Opening up to 0.1 Sq.M or “boxing” left for inserts etc. for facility of Contractor’s work, shall be neglected as non-existent for the purpose of formwork measurement.

e) No extra measurement or payment shall be made for making the formwork waterproof or for supports, scaffolding, centering, approaches, etc.

f) No measurement shall be taken for the formwork in pockets, opening, chase etc. in concrete if the cross-sectional are is less than or equal to 0.1 Sq.M. in each case. If the cross-sectional area of any opening exceeds 0.1 S.M. the formwork shall be measured under appropriate classification.

g) Fixing and removing pockets and openings of sectional area less than 0.1 Sq.M. shall be measured on number basis and paid separately.

h) No separate payment shall be made for using fillets for rounding of chamfering junctions, corners, etc.

i) Formwork, if required, for joints shown on drawings or instructed by the Engineer shall be paid for the “leading side” only.

ने. गुण ४०—२०४२
यु.डि.सि. ६२१.६४३.२(६७८.७४२)६९६.११
तेश्रो पुनरिक्षणः २०७३/०९/१९
चौथो पुनरिक्षणः २०७४/१०/०९

नेपाल गुणस्तर

NEPAL STANDARD

हाई डेन्सिटी पोलिथिन पाईप

(खाने पानीको लागि प्रयोग हुने)

नेपाल सरकार
उद्योग मन्त्रालय
नेपाल गुणस्तर तथा नापतौल विभाग

ने. गुण ४०—२०४२
यु.डि.सि. ६२१.६४३.२(६७८.७४२)६९६.११
तेश्रो पुनरिक्षणः २०७३/०९/१९
चौथो पुनरिक्षणः २०७४/१०/०९

नेपाल गुणस्तर

NEPAL STANDARD

हाई डेन्सिटी पोलिथिन पाईप

(खाने पानीको लागि प्रयोग हुने)

नेपाल सरकार
उद्योग मन्त्रालय
नेपाल गुणस्तर तथा नापतौल विभाग

नेपाल गुणस्तर
Nepal Standard

ने.गुण. ४०-२०४२ हाई डेन्सिटी पोलिथिन पाईप

निर्माण तथा विकास सामाग्रीहरु अन्तर्गत हाई डेन्सिटी पोलिथिन पाईप विषयक प्राविधिक उप-समितिका सदस्यहरु :

सि.नं.	नाम	संस्था
१.	श्री रविनलाल चित्रकार	खानेपानी तथा ढल निकास विभाग
२.	श्री स्टालिनमान प्रधान	उद्योग विभाग
३.	श्री भक्तानन्द बज्राचार्य	नेपाल औद्योगिक विकास कर्पोरेसन
४.	श्री लाउरेन्स सर्टसन	युनिसेफ
५.	श्री बिजय गोपाल राजभण्डारी (वैकल्पिक)	
६.	श्री अणकुमार खनाल	नेपाल पोलिथिन एण्ड प्लाष्टिक इं. प्रा.लि.
७.	श्री इ.ऐ.के. गुप्ता	हिमालय प्लाष्टिक प्रा.लि.
८.	श्री एम.भि. थापा (वैकल्पिक	
९.	श्री जगदिश प्रसाद चौधरी	नारायणी प्लाष्टिक प्रा.लि.
१०.	श्री राजेश चौधरी (वैकल्पिक)	
११.	श्री ललितमान श्रेष्ठ	पन्चकन्या प्लाष्टिक प्रा.लि.
१२.	श्री अशोक श्रेष्ठ (वैकल्पिक)	
१३.	श्री रोहित श्रेष्ठ	नेपाल प्लाष्टिक प्रा.लि.
१४.	श्री मनमोहन श्रेष्ठ (वैकल्पिक)	
१५.	श्री रमेश श्रेष्ठ	लक्ष्मी प्लाष्टिक प्रा.लि.
१६.	श्री बिष्णु शर्मा	विशेषज्ञ
१७.	श्री त्तासी तेन्जिङ्ग	विशेषज्ञ
१८.	श्री दिनेशराज भट्टराई	निर्देशक, नेपाल गुणस्तर कार्यालय
१९.	श्री विजयकुमार श्रेष्ठ	निरीक्षक, नेपाल गुणस्तर कार्यालय
२०.	श्री उत्तमकुमार कुंवर	केमिष्ट, नेपाल गुणस्तर कार्यालय

बैठक संचालक

श्री दुर्गाबहादुर कार्जित - केमिकल इं. नेपाल गुणस्तर निर्धारण समितिको कार्यालय,

नेपाल गुणस्तर

ने.गुण.४०-२०७४ हाई डेन्सिटि पोलिथिन पाईप

प्राविधिक समितिका सदस्यहरु

१. श्री रोमी मान्नधर, नि. महानिर्देशक ,नेपाल गुणस्तर तथा नापतौल विभाग
२. श्री प्रमोदा प्रधान, उप-महानिर्देशक, नेपाल गुणस्तर तथा नापतौल विभाग
३. श्री गणेश प्रसाद पाठक निर्देशक, नेपाल गुणस्तर तथा नापतौल विभाग
४. श्री आलोक कुमार मिश्र, निर्देशक , नेपाल गुणस्तर तथा नापतौल विभाग
५. श्री मनोज कुमार उपाध्याय, निर्देशक , नेपाल गुणस्तर तथा नापतौल विभाग
६. श्री माधव तिमिल्सिना, अध्यक्ष ,उपभोक्ता अधिकार अनुसन्धान मन्च
७. श्री सुरेन्द्र वैध्य ,ईन्जि.,डि.यु.डि.वि.सि.
८. श्री विरेन्द्र भट्टराई ,HDPE pipe म्यानुफ्याकचरिंग एशोशिएसन
९. श्री सिदार्थ शंकर, ई.अ.सं. ,पुल्चोक इन्जिनियरिंग क्याम्पस
१०. श्री कविन्द्र कार्कि, स्थानीय पूर्वाधार तथा कृषि सडक बिभाग
११. श्री वैकुण्ठ श्रेष्ठ, वि.एस.ई.टि. नेपाल
१२. श्री मनिष प्रकाश, काठमाडौं बिश्वबिधालय
१३. श्री देवेन्द्र साहु ,पन्चकन्या प्लाष्टिक प्रा.लि..
१४. श्री विजयमान शंकर,काठमाडौं उपत्यका खानेपानी लिमिटेड, त्रिपुरेश्वर
१५. श्री ईश्वर प्रसाद ,खानेपानि सस्थांन
१६. श्री मनीष कर्ण, के. ई., नेपाल गुणस्तर तथा नापतौल विभाग
१७. श्री कृष्ण ब. सोडारी मे.ई. नेपाल गुणस्तर तथा नापतौल विभाग

बैठक संचालक

श्री अनिल शाक्य , निर्देशक, गु. नि.तथा प्र. शा. ,नेपाल गुणस्तर तथा नापतौल विभाग

NBSM

काठमाण्डौ, नेपाल ।

नेपाल गुणस्तर परिषद्

Nepal Council for Standardization (NCS)

ने.गुण.४०-२०७४ हाई डेन्सिटि पोलिथिन पाईप

चौथो पुनरिक्षण

अध्यक्ष

माननिय सुनिल बहादुर थापा, उधोग मन्त्री

उपाध्यक्ष

श्री याम कुमारी खतिवडा, सचिव, उधोग मन्त्रालय

सदस्यहरु

सि.नं.	नाम	पद	संस्था
१.	श्री रिबिराज कोईराला	सह-सचिव	उधोग मन्त्रालय
२.	.....	सह-सचिव	वाणिज्य मन्त्रालय
३.	श्री सुरेन्द्र पसाद सुवेदी	सह-सचिव	विज्ञान तथा प्रविधि मन्त्रालय
४.	.....	सह-सचिव	खाध प्रविधि तथा गुणनियन्त्रण वि.
५.	.....	सह-सचिव	भौतिक पुर्वाधार तथा यातायात मन्त्रालय
६.	श्री डिल्लीराज घिमिरे	सह-सचिव	कानुन तथा संसदीय व्यवस्था मन्त्रालय
७.	श्री सुमनलाल श्रेठ	सह-प्राध्यापक	त्रिभुवन विश्वविधालय
८.	श्री प्रा.डा. दिपक प्रसाद सुवेदी	प्राध्यापक	काठमांडौ विश्वविधालय
९.	श्री ज्ञानेन्द्रलाल प्रधान		नेपाल उधोग वाणिज्य महासंघ
१०.	श्री दिपक श्रेठ		नेपाल चेम्बर अफ कमर्स
११.	.....		उपभोक्ता सरोकारवाला संघ संस्था
१२.	श्री सिर्जना बुर्लाकोटी		उपभोक्ता सरोकारवाला संघ संस्था
१३.	श्री अरुणदेव भट्टराई		विज्ञ

सदस्य सचिव

श्री विश्वबाबु पुडासैनी, महानिर्देशक,ने.गु.तथा ना.तौ.वि.

नेपाल गुणस्तर

०.प्रस्तावना

१. नेपाल गुणस्तर (प्रमाण चिन्ह) ऐन २०३७ ले प्रदत अधिकार प्रयोग गरी नेपाल गुणस्तर परिषदबाट गुणस्तर निर्धारण गर्ने यस विभागलाई भएको निर्देशन र नीति अनुसार राष्ट्रिय स्तरमा गुणस्तर प्रलेख हरु, तयार पार्ने सिलसिलामा आवश्यक तरिका र ढाचामा यो गुणस्तर प्रलेख तर्जुमा गरी प्रस्तुत गरिएको छ। यसले नेपाल गुणस्तर संग सम्बन्धित सबै पक्षका निमित आवश्यक निर्देशिकाको कार्य गर्ने छ।

२. यो प्रलेख तयार पार्दा गुणस्तर निर्धारणका प्रलेख सम्बन्धका अन्य देशहरुले र अन्तराष्ट्रिय संगठनहरु ले अपनाएका प्रणाली, चलन, तरिका र ढाचालाई यथोचित ध्यानमा राखिएको छ। यसले तर्जुमाको लागि विशेष गरी देहायको विदेशी तथा अन्तराष्ट्रिय संघ संस्थाको प्रलेख तथा अन्य साधानहरु को सहयोग लिइएको छ।

(क) आई.एस.ओ. – इन्टरनेशनल अर्गनाइजेशन फर स्टाण्डर्डडईजेशन
(ख) वि.एस.आई. – ब्रिटिश स्ट्याण्डर्ड इन्स्टिच्यूसन
(ग) वि.आई.एस. – ब्युरो अफ इन्डियन स्टाण्डर्ड

३. प्रलेख तयार पार्दा खास ध्यानमा राखिएका बुंदाहरु

३.१ गुणस्तर प्रलेखको तर्जुमा गर्दा अन्य प्रलेखको कुनै पनि परिच्छेदको उलंघन हुन नजाओस भनि यथासक्य होसियारी राखिएको छ। असावधानीबाट केही उलंघन हुन गएको ज्ञात हुन आएमा यसमा चाहिने संशोधनको लागि यथाशिघ्र कदम उठाईने छ।

३.२ देशको ऐन नियम अन्तरतग परेको सबै बुंदाहरु लाई यथोचित मान्यता दिई यसको कुनै दफा तथा परिच्छेदको उलंधन नहुने गरी यो गुणस्तर प्रलेख तयार पार्ने कोशिस गरिएको छ। कथंकदाचित गुणस्तर प्रलेखको कुनै भागमा उल्लेखित कुराहरु हाल प्रचलनमा भएका तथा भविष्यमा आउने ऐन नियम संग बाझिन गएमा त्यस्ता (प्रलेख) का कुराहरु, स्वत: निस्कृय हुनेछ।

३.३ नापतौल ईकाइ तथा तिनीहरुको पान्तर गर्दा स्टान्डर्ड नापतौल ऐन अन्तरर्गत जे जति नियमहरु छन् सबैलाई यथोचित मान्यता दिई यिनीहरुको प्रयोग गरिएको छ

३.४ यस प्रलेखको तर्जुमा ने.गु. तथा आई.एस.आई. र त्यस्तै अन्य अन्तराष्ट्रिय संघ संस्थाहरु का सम्बन्धित विषयमा निर्देशिका पुस्तीका तथा गुणस्तर निर्धारण र गुण नियन्त्रण सम्बन्धी अन्य कार्यहरुको प्रतिवेदन ईत्यादिबाट सामाग्रिहरु यथासम्भव प्राप्त गरी तिनीहरु को सिफरिस अनुरुप सामान्जस्य ल्याउन खोजिएको छ।

३.५ यस प्रलेखको तर्जुमा गर्दा नापनतौल इत्यादि विभिन्न ईकाईहरुको लागि अन्तराष्ट्रिय क्षेत्रमा चलि रहेको बहुमान्य ईकाई तथा आई.यस.ओ ले समेत सिफरिस गरेको एसाआई इकाई प्रणालीलाई यथासम्भव प्रयोगमा ल्याएको छ।

४. देशको सर्वाङ्गिण विकासको क्रममा खाने पानीको लागि प्रयोग हुने हाइडेन्सिटी पोलिथिन पाईपले महत्वपूर्ण स्थान ओगटदै आएको कुरा सर्वविदितै छ । हाईडेन्सिटी पोलिथिन पाईप अधातुका पाईपहरु को तुलनामा कैयन गुना हलुंगो हुनाको साथै खिया नलाग्ने एवं ढुवानी गर्न सजिलो भएकोले यसको प्रयोग दिन प्रति दिन बढ्दै गैरहेको पाइएको छ । हाल देश भित्र आधुनिक प्रविधि अपनाई पाईपहरु उत्पादन गर्ने धेरै उद्योगहरु स्थापना पनि भै सकेका छन । ती उद्योगहरु द्वारा उत्पदित पाइपहरुको कार्य सम्पादन गुणमा एकपता ल्याउनका साथै उपभोक्तावर्गले चाहेको विभिन्न आवश्यकता अनुप बनाउनको लागि यस गुणस्तर प्रलेखको तर्जुमा गर्न आवश्यक हुन आएको छ ।

५. यस गुणस्तर प्रलेख २०४० सालमा पहिलो चोटी प्रकाशन भएको थियो । सो प्रलेखमा भएका विन्नि त्रुटिहरु हटाउन र उत्पादकहरु र खरीदकर्ताहरु आवश्यकता हरुलाई पूर्ति गर्नु यस पहिलो संशोधित प्रलेखको आवश्यकता हुन आएको हो । उत्पादकहरु र खरीदकर्ताको सुझावहरु लिई यस प्रलेखलाई पहिलो संशोधन गरिएको हो ।

६. यस गुणस्तर प्रलेखमा उल्लेखित आवश्यकताहरु अनुरुप छ वा छैन भन्ने कुरा निश्चित गर्न गरिएको परिक्षण वा विश्लेषणको नतिजा प्रस्तुत गर्न संस्थाहलाई राउण्डिङ्ग अफ (Rounding of Numerical Values) गर्दा नेगुण नं.१७ अनुसार गरिनु पर्दछ ।

७. यस गुणस्तर प्रलेखमा हाईडेन्सिटी पोलिथिन पाइपको विवरण सम्बन्धि प्राविधिक पक्षलाई मात्र समावेश गरिएको छ । कारोबार सम्बन्धि कुराहरु यस प्रलेखको क्षेत्र भित्र पर्दैनन् ।

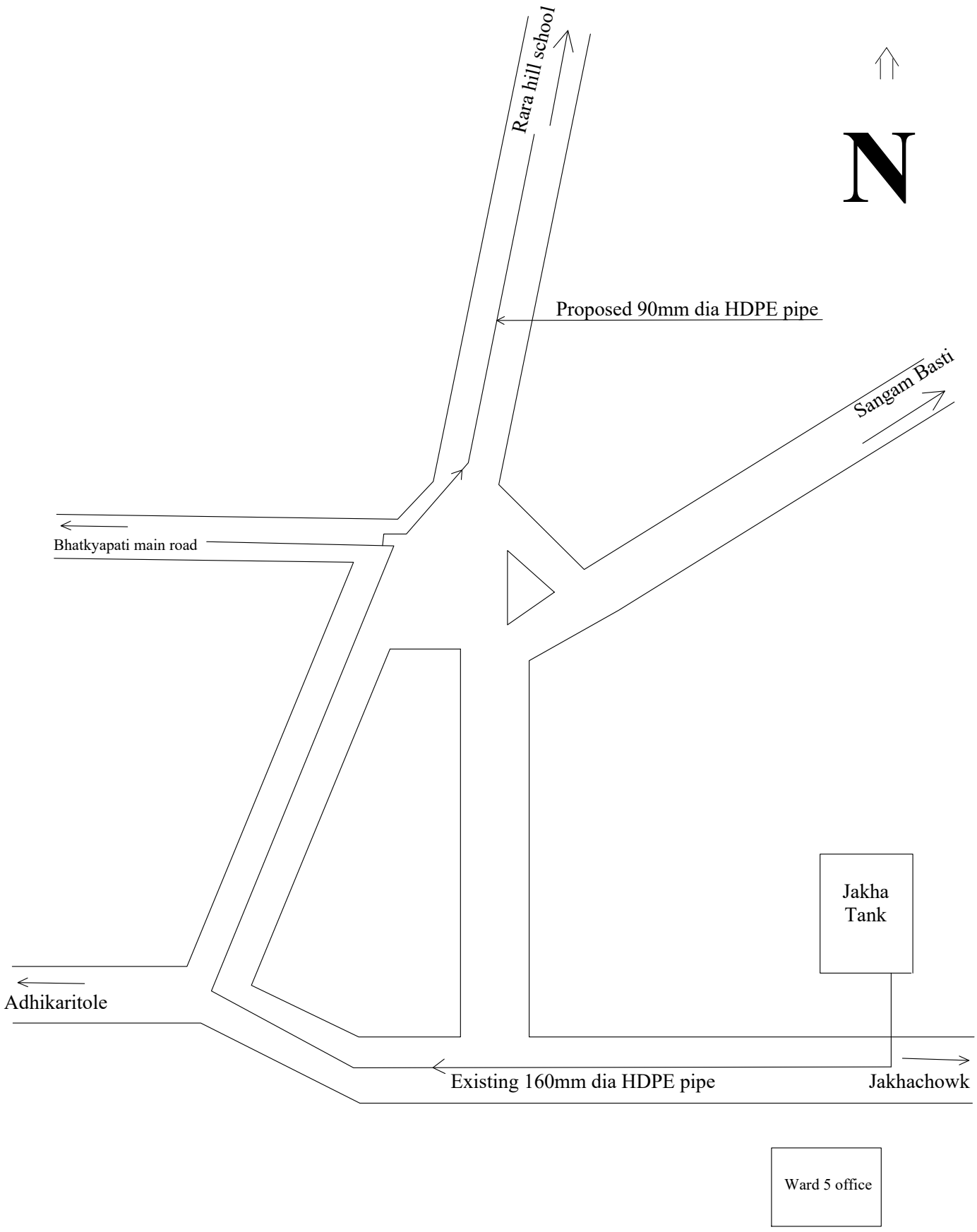
Section - VII
Drawings

Note:

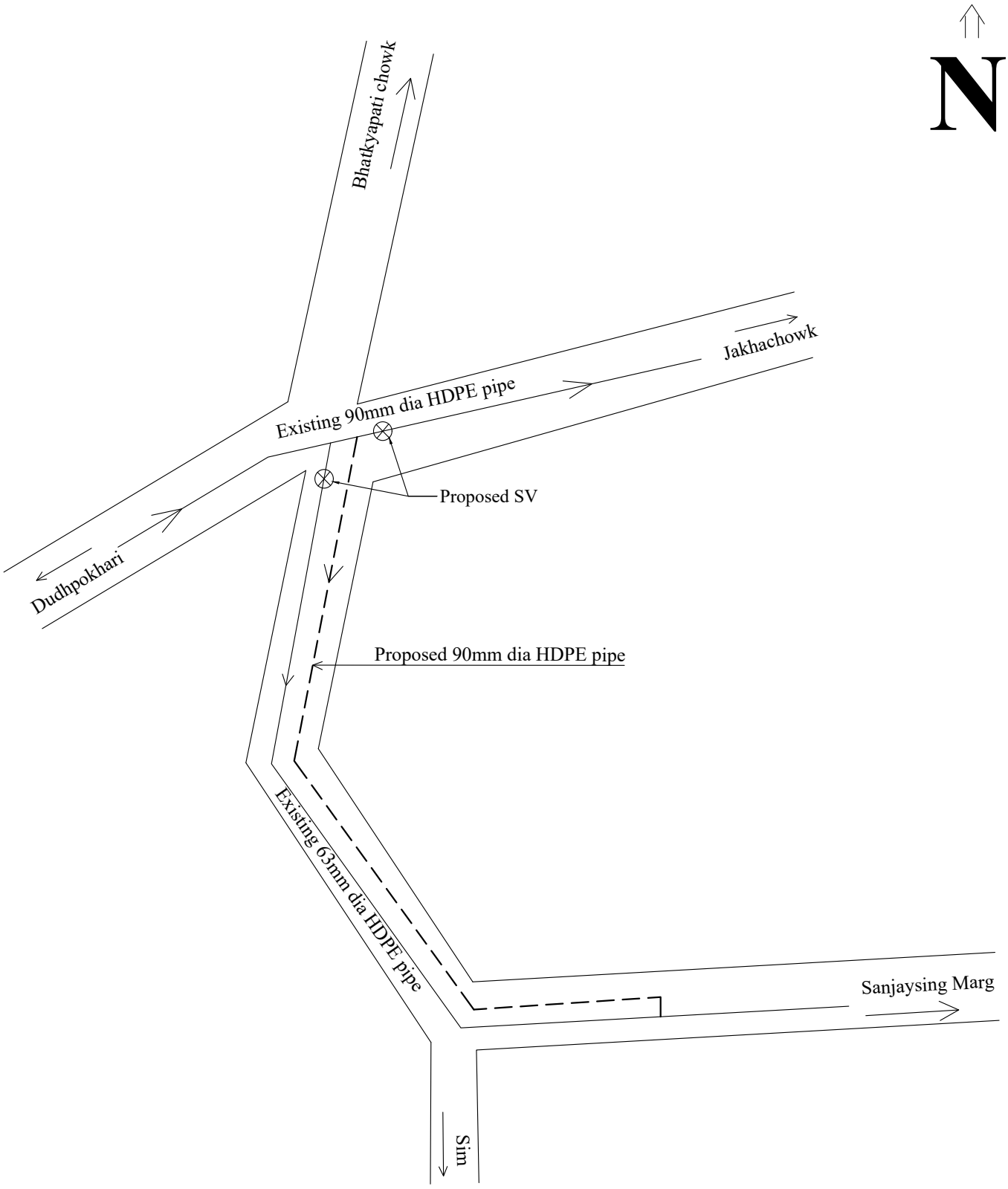
1. It is customary to bind the drawings in a separate volume, which is often larger than other volumes of the contract documents. The size will be dictated by the scale of the drawings, which must not be reduced to the extent that details are reduced illegible.

2. A simplified map showing the location of the Site in relation to the local geography, indicating major roads, posts, airports, and railroads, is helpful.

3. The construction drawings, even if not fully developed, must show sufficient details to enable bidders to understand the type and complexity of the work involved and the price the Bill of Quantities.



Kathmandu Upatyaka Khanepani Limited Kirtipur Branch Office	Project: Pipeline Extension work at Supply Kirtipur-05,Adhikari tole, Padherodol	Drawn :	Scale : Not in scale
		Checked :	Date :
		Approved :	Sheet No. : 1



Kathmandu Upatyaka Khanepani Limited Kirtipur Branch Office	Project: Supply, laying and jointing of 90mm dia. HDPE pipeline at Kirtipur-05, Sanjay Shing Marg	Drawn :	Scale : Not in scale
		Checked :	Date :
		Approved :	Sheet No. : 2

Section - VIII
Bill of Quantities

Notes for Unit Rate Contracts:

Objectives

The objectives of the Bill of Quantities are

(a) To provide sufficient information on the quantities of Works to be performed to enable Bids to be prepared efficiently and accurately; and

(b) When a Contract has been entered into, to provide a priced Bill of Quantities for use in the periodic valuation of Works executed.

In order to attain these objectives, Works should be itemized in the Bill of Quantities in sufficient detail to distinguish between the different classes of Works, or between Works of the same nature carried out in different locations or in other circumstances which may give rise to different considerations of cost. Consistent with these requirements, the layout and content of the Bill of Quantities should be as simple and brief as possible.

Content

The Bill of Quantities should be divided generally into the following sections:

(a) Preamble;

(b) Work Items (grouped into parts);

(c) Day works Schedule;

d) Provisional Sums; and

(d) Summary.

Preamble

The Preamble should indicate the inclusiveness of the unit prices, and should state the methods of measurement which have been adopted in the preparation of the Bill of Quantities and which are to be used for the measurement of any part of the works.

Work Items

The items in the Bill of Quantities should be grouped into sections to distinguish between those parts of the Works which by nature, location, access, timing, or any other special characteristics may give rise to different methods of construction, or phasing of the Works, or considerations of cost. General items common to all parts of the works may be grouped as a separate section in the Bill of Quantities.

Day work Schedule

A Day work Schedule should be included only if the probability of unforeseen work, outside the items included in the Bill of Quantities, is high. To facilitate checking by the Employer of the realism of rates quoted by the Bidders, the Day work Schedule should normally comprise the following:

(a) A list of the various classes of labour, materials, and Constructional Plant for which basic day work rates or prices are to be inserted by the Bidder, together with a statement of the conditions under which the Contractor will be paid for work executed on a day work basis.

(b) Nominal quantities for each item of Day work, to be priced by each Bidder at Day work rates as bid. The rate to be entered by the Bidder against each basic Day work item should include the Contractor's profit, overheads, supervision, and other charges.

Provisional Sums

A general provision for physical contingencies (quantity overruns) may be made by including a provisional sum in the Summary Bill of Quantities. Similarly, a contingency allowance for possible price increases should be provided as a provisional sum in the Summary Bill of Quantities. The inclusion of such provisional sums often facilitates budgetary approval by avoiding the need to request periodic supplementary approvals as the future need arises. Where such provisional sums or contingency allowances are used, the Contract Data should state the manner in which they will be used, and under whose authority (usually the Project Manager's).

Summary

The Summary should contain a tabulation of the separate parts of the Bill of Quantities carried forward, with provisional sums for Day work, for physical (quantity) contingencies, and for price contingencies (upward price adjustment) where applicable.

These Notes for Preparing Specifications are intended only as information for the Employer or the person drafting the Bidding documents. They should not be included in the final documents.

Preamble of Bill of Quantities

A. General

1. The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, General and Special Conditions of Contract, Technical Specifications, and Drawings.

2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Project Manager and valued at the rates and prices bid in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Project Manager may fix within the terms of the Contract.

3. For any item for which measurement is based on records made before or during construction the records shall be prepared and agreed between the Engineer and the Contractor. Should the Contractor carry out such work without the prior agreement of the Engineer, the Engineer may request the Contractor to carry out investigations to confirm the extent of the work and the quantity of work certified for payment shall be solely at the Engineer's discretion. The cost of any such investigation shall be borne by the Contractor.

4. The rates and prices bid in the priced Bill of Quantities shall, except as otherwise provided under the Contract, include all construction equipment, labour, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.

5. A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.

6. The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bill of Quantities, and where no Items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.

7. General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Bill of Quantities. The Specification Clause references where given in the item description of the Bills of Quantities are for the convenience of bidders and generally refer to the principal relevant-specification clause but do not necessarily represent the whole of the specification requirements for the work required within the item. The presence of a Specification clause reference shall not in any way reduce the Bidders obligation to complete work in accordance with all the requirements of the Specification.

8. Provisional Sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Project Manager in accordance with the Conditions of Contract.

9. The method of measurement of completed work for payment shall be in accordance with the Specifications.

10. The abbreviations and symbols used in this Bill of Quantities are:
    [Insert as applicable]

B. Day work Schedule

a) General

1. Work shall not be executed on a day work basis except by written order of the Project Manager. Bidders shall enter basic rates for day work items in the Schedules. These rates shall apply to any quantity of day work ordered by the Project Manager. Nominal quantities have been indicated against each item of day work, and the extended total for day work shall, be carried forward as a Provisional Sum to the Summary Total Bid Amount. Unless otherwise adjusted, payments for day work shall be subject to price adjustment in accordance with the provisions in the Conditions of Contract.

b) Day work Labour

1. In calculating payments due to the Contractor for the execution of day works, the hours for labour will be reckoned from the time of arrival of the labour at the job site to execute the particular item of day work to the time of departure from the job site, but excluding meal breaks and rest periods. Only the time of classes of labour directly doing work ordered by the Project Manager and are competent to perform such work will be measured. The time of gangers (charge hands) actually doing work with the gangs will also be measured but not the time of foremen or other supervisory personnel.
2. The Contractor shall be entitled to payment in respect of the total time that labour is employed on day work, calculated at the basis rates entered by it in the " SCHEDULE OF DAY WORK RATES: 1. LABOUR ". The rates for labour shall be deemed to cover all costs to the Contractor including (but not limited to) i) the amount of wages paid to such labour, transportation time, overtime, subsistence allowances, ii) any sums paid to or on behalf of such labour for social benefits in accordance with Nepal law, iii) Contractor's profit, overheads, superintendence, liabilities and insurance and iv) charges incidental to the foregoing.

c) Day work Equipment

1. The Contractor shall be entitled to payments in respect of Constructional Plant already on site and employed on day work at the basis rental rates entered by him in the “SCHEDULE OF DAY WORK RATES:2 EQUIPMENT ”. The said rates shall be deemed to include due and complete allowance for depreciation, interest, indemnity and insurance, repairs, maintenance, supplies, fuel, lubricant, and other consumables and all overhead, profit and administrative costs related to the use of such equipment. The cost of drivers, operators and assistants also shall be included in the rate of the equipment and no separately payment shall be made for it.
2. In calculating the payment due to the Contractor for Constructional Plant employed on day work, only the actual number of working hours will be eligible for payment, except that where applicable and agreed with the Project Manager, the travelling time from the part of the Site where the Construction Plant was located when ordered by the Project Manager to be employed on day work and the time for return journey there to shall be included for payment.

d) Day work Materials

1. The Contractor shall be entitled to payment in respect of materials used for day work (except for materials for which the cost is included in the percentage addition to labour costs as detailed heretofore), at the rates entered by him in the "SCHEDULE OF DAY WORK RATES: 3 MATERIALS" and shall be deemed to include overhead charges and profit as follows;
   (i) the rates for materials shall be calculated on the basis of the invoiced price, freight, insurance, handling expenses, damage, losses, etc. and shall provide for delivery to store for stockpiling at the Site.
   (ii) the cost of hauling materials for use on work ordered to be carried out as day work, from the store or stockpile on the Site to the place where it is to be used also shall be include in the same rate.

Provisional Sums

A general provision for physical contingencies (quantity overruns) may be made by including a provisional sum in the Summary Bill of Quantities. Similarly, a contingency allowance for possible price increases should be provided as a provisional sum in the Summary Bill of Quantities. The inclusion of such provisional sums often facilitates budgetary approval by avoiding the need to request periodic

supplementary approvals as the future need arises. Where such provisional sums or contingency allowances are used, the SCC should state the manner in which they will be used, and under whose authority (usually the Project Manager's).

The estimated cost of specialized work to be carried out, or of special goods to be supplied, by other contractors should be indicated in the relevant part of the Bill of Quantities as a particular provisional sum with an appropriate brief description. A separate procurement procedure is normally carried out by the Employer to select such specialized contractors. To provide an element of competition among the Bidders in respect of any facilities, amenities, attendance, etc., to be provided by the successful Bidder as prime Contractor for the use and convenience of the specialist contractors, each related provisional sum should be followed by an item in the Bill of Quantities inviting the Bidder to quote a sum for such amenities, facilities, attendance, etc.

Bill of Quantities

1 Provisional Sum

Procument Item Details

Sl. No.	Item Description	Unit	Quantity	Unit Rate (NPR)	Amount (NPR)
1			0.0	0.0	0.00

2 Fabricated products and materials

2.1 Construction materials and associated items

2.1.1 Pipeline piping pipes casing tubing and related items

2.1.1.1 Pipes and fittings

Procument Item Details

Sl. No.	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
1	90mm dia. dia HDPE Pipe (PN10)	Rm.	690.00			
2	80mm dia CI Sluice valve	No.	3.00			
3	80mm dia HDPE /HDPE Flange Set OD	No.	6.00			
4	80mm dia HDPE /HDPE Flange Set Normal	No.	6.00			
5	90x90x90mm dia HDPE Tee	No.	2.00			
6	110x110x90mm dia HDPE Tee	No.	1.00			
7	90mm x 63mm dia. HDPE Reducer	No.	1.00			
8	80mm dia CI Mechanical coupling	No.	2.00			
9	90mm dia HDPE Endcap	No.	2.00			
10	225x 150mm MS Valve Cover with concrete slab '	No.	3.00			
11	16mm dia Nut Bolts	No.	24.00			
12	Rubber Washer	Sq.m.	1.50			

3 Construction work

3.1 Water Supply System

Procument Item Details

Sl. No.	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
1	Transportation of required materials suppliers store to site (10 km distance) and wastage materials of compund to dumping site as per instruction of site Incharge	Trip	2.00			
2	Cutting and Removal Of 200mm thick Rigid RCC Rigid Pavement as per instruction of site incharge at Sanjay Singh Marg and Padherodol	Cu.m.	6.98			

Procument Item Details						
Sl. No.	**Item Description**	**Unit**	**Quantity**	**Bidder's Rate (NPR)**	**Bidder's Rate (in words)**	**Total Amount (NPR)**
3	Earthwork excavation in Gravel boulder mixed hard soil at Sanjay Singh Marg and Padherodol	Cu.m.	412.80			
4	Laying and jointing of 90mm dia. HDPE (PN 10) pipeline with butt welded joint at Sanjay Singh Marg	Rm.	320.00			
5	Laying and jointing of 90mm dia. HDPE (PN 10) pipeline with butt welded joint at Adhikari Tole	Rm.	370.00			
6	Installation of 80 mm dia. CI Sluice Valve / GI Tee	No.	3.00			
7	Cutting, tapering, threading and installation of 80mm dia HDPE /HDPE Flange Set	No.	12.00			
8	Cutting, tapering, threading and installation of 80mm dia CI Mechanical coupling	No.	2.00			
9	Cutting, tapering, threading and installation of 110x110x90mm dia HDPE Tee	No.	1.00			
10	Cutting, tapering, threading and installation of 90x90x90mm dia HDPE Tee	No.	2.00			
11	Cutting, tapering, threading and installation of 90mm x 63mm dia. HDPE Reducer	No.	1.00			
12	Cutting, tapering, threading and installation of 90mm dia HDPE Endcap	No.	2.00			
13	Installation of 225x 150mm MS Valve Cover	No.	3.00			
14	Earth work back filling in gravel boulder mixed soil with well compaction at at Sanjay Singh Marg and Padherodol	Cu.m.	412.80			
Total of Procument Items						
Total Item Price						
VAT						
Grand Total						

Section - IV
General Conditions of Contract

Section VII. General Conditions of Contract (GCC)

1. General Provisions	
1.1 Definitions	In the Contract as defined below, the words and expressions defined shall have the following meanings assigned to them, except where the context requires otherwise:
The Contract	1.1.1 "**Contract**" means the Agreement signed between the Employer and the contractor and the other documents listed in the Special Conditions of Contract (SCC). 1.1.2 "**Specification**" means the document as listed in the SCC, and any variation to such document. 1.1.3 "**Drawings**" means the Employer's drawings of the Works as listed in the SCC, and any variation to such drawings. 1.1.4 "**Bill of Quantities**" means the priced and completed bill of quantities forming part of the Tender. 1.1.5 "**Bid or Quotation**" means the contractor's priced offer to the Employer for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Acceptance. 1.1.6 "**Letter of Acceptance**" means the formal acceptance by the Employer of the **bid** or Tender.
Persons	1.1.7 "**Employer**" means the person named in the Agreement and the legal successors in title to this person, but not (except with the consent of the contractor) any assignee. 1.1.8 "**Contractor**" means the person named in the Agreement and the legal successors in title to this person, but not (except with the consent of the Employer) any assignee. 1.1.9 "**Party**" means either Employer or the contractor.
Date, Times and Periods	1.1.10 "**Commencement Date**" means the date stated in the SCC after the date the Agreement comes into effect or any other date agreed between the Parties. 1.1.11 "**Day**" means a calendar day.

	1.1.12 "**Time for Completion**" means the time for completing the Works as stated in the SCC (or as extended under Sub-Clause 6.3), calculated from the Commencement Date.
Money and Payments	1.1.13 "**Cost**" means all expenditure properly incurred (or to be incurred) by the contractor, whether on or off the Site, including overheads and similar charges, but does not include profit. 1.1.14 "**Contract Price**" means the sum stated in the Letter of Acceptance as payable to the contractor and adjusted with any Variation Orders and Other Adjustments upon completion of the works and the remedying of any defects therein in accordance with the provisions of the Contract. 1.1.15 "**Retention Money**" means the aggregate of all monies retained by the Employer pursuant to Sub-Clause 10.3
Other Definitions	1.1.16 "**Contractor's Equipment**" means all apparatus, machinery, vehicles, facilities and other things required for the execution of the Works but does not include Materials or Plant. 1.1.17 "**Country**" means Nepal. 1.1.18 "**Employer's Liabilities**" means those matters listed in Sub-Clause 5.1. 1.1.19 "**Materials**" means things of all kinds (other than Plant) intended to form or forming part of the permanent work. 1.1.20 "**Plant**" means the machinery and apparatus intended to form or forming part of the Permanent Works. 1.1.21 "**Site**" means the places provided by the Employer where the Works are to be executed, and any other places specified in the Contract as forming part of the Site. 1.1.22 "**Variation**" means any change which is a result of unforeseen circumstances that arise as a result of instruction by the Employer/ Engineer under Sub-Clause 9.1. 1.1.23 "**Works**" means all the work and design (if any) to be performed by the contractor including temporary work and any Variation. 1.1.24 "**Permanent Works**" means the permanent works to be executed (Including Plant) in accordance with the Contract. 1.1.25 "**Temporary Works**" means all temporary works of every kind (other than contractor's Equipment) required in or about the execution and completion of the Works and the remedying of any defects therein.
1.2 Interpretation	Words importing persons or parties shall include firms and organisations. Words importing singular or one gender shall include plural or the other gender where the context requires.
1.3 Priority of Documents	The documents forming the Contract shall to be taken as mutually explanatory of one another. If an ambiguity or discrepancy is found in the documents, the Employer shall issue any necessary instructions to the contractor, and the priority of the documents shall be in accordance with the order as **listed in the SCC**.
1.4 Law	The law of the Contract is stated in the Law of Nepal.

1.5Communications	Where provision is made for the giving or issue of any notice, instruction, or other communication by any person, unless otherwise specified such communication shall be written in the language stated in the SCC as shall not be unreasonably withheld or delayed. If a notice given pursuant to Sub Clause 1.5 fails to be delivered due to failure to trace the address of the party then the notice shall be published as public notice in a National daily newspaper and when the notice is so published then the notice shall be considered to be delivered to the concerned party.
1.6 Statutory Obligations	The contractor shall comply with the laws of Nepal where activities are performed. The contractor shall give all notices and pay all fees and other charges in respect of the Works.
2. The Employer	
2.1 Provision of Site	The Employer shall provide the Site and right of access thereto at the times stated in the SCC.
2.2 Permits and Licenses	The Employer shall, if requested by the contractor, assist him in applying for permits, licences or approvals which are required for the Works.
2.3 Employer's Instructions	The contractor shall comply with all instructions given by the Employer in respect of the Works including the suspension of all or part of the Works.
2.4 Approvals	No approval or consent or absence of comment by the Employer or the Employer's representative shall affect the contractor's obligations.
3. Employer's Representatives	
3.1 Authorised Person	One of the Employer's personnel shall have authority to act for him. This authorised person shall be as stated in the SCC, or as otherwise notified by the Employer to the contractor.
3.2 Employer's Representative	The Employer may also appoint a firm or individual to carry out certain duties. The appointee may be named in the SCC, or notified by the Employer to the contractor from time to time. The Employer shall notify the contractor of the delegated duties and authority of this Employer's representative.
4. The Contractor	
4.1 General Obligations	The contractor shall carry out the Works properly and in accordance with the Contract. The contractor shall provide all supervision, labour, Materials, Plant and contractor's Equipment which may be required. All Materials and Plant on Site shall be deemed to be the property of the Employer. During continuance of the of the contract, the contractor and his sub-contractors shall abide at all times by all labour laws, including child labour related enactments, and rules made there under. A child who has not attained the age of fourteen years shall not be employed in any work as a labourer.

4.2	**Contractor's Representative**	The contractor shall submit to the Employer for consent the name and particulars of the person authorised to receive instructions on behalf of the contractor.
4.3	**Subcontracting**	The contractor shall not subcontract the Works.
4.4	**Performance Security**	As **stated in the SCC**, the Contractor shall deliver to the Employer no later than the date specified in the Letter of Acceptance.
5.	**Employer's Liabilities**	
5.1	**Employer's Liabilities**	In this Contract, Employer's Liabilities mean: a. war, hostilities (whether war be declared or not), invasion, act of foreign enemies, within the Country, b. rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war, within the Country, c. riot, commotion or disorder by persons other than the contractor's personnel and other employees, affecting the Site and/or the Works. d. use or occupation by the Employer of any part of the Works, except as may be specified in the Contract, e. design of any part of the Works by the Employer's personnel or by others for whom the Employer is responsible, f. any operation of the forces of nature affecting the Site and/or the Works, which was unforeseeable or against which an experienced contractor could not reasonably have been expected to take precautions g. a suspension under Sub-Clause 2.3 unless it is attributable to the contractor's failure, h. any failure of the Employer, i. physical obstructions or physical conditions, other than climatic conditions, encountered on the Site during the performance of the Works, which obstructions or conditions were not reasonably foreseeable by an experienced contractor and which the contractor immediately notified to the Employer, j. any delay or disruption caused by any Variation, k. any change to the law of the Contract after the date of the contractor's offer as stated in the Agreement, l. losses arising out of the Employer's right to have the permanent work executed on, over, under, in or through any land, and to occupy this land for the permanent work, and m. damage which is an unavoidable result of the contractor's obligations to execute the Works and to remedy any defects.
6.	**Time for Completion**	
6.1	**Execution of the Works**	The contractor shall commence the Works on the Commencement Date and shall proceed expeditiously and without delay and shall complete the Works within the Time for Completion.
6.2	**Programme**	The contractor shall submit to the Employer a programme for the Works within the time stated in the SCC

6.3	**Extension of Time**	The contractor shall be entitled to an extension to the Time for Completion if he is or shall be delayed by any of the Employer's Liabilities. The contractor shall submit an application to the Employer for extension of time, stating the causes for delay, 21 days before the expiry of the Contract completion date. On receipt of an application from the contractor, within 21 days , the Employer shall consider all supporting details provided by the contractor and shall decide extend the Time for Completion as appropriate.
6.4	**Liquidated Damages for Delay**	If the contractor fails to complete the Works within the Time for Completion, the contractor's liability to the Employer for such failure shall be to pay the amount stated in the SCC for each day for which he fails to complete the Works.
7.	**Taking-Over**	
7.1	**Completion**	The contractor may notify the Employer when he considers that the Works are complete. In addition to the other provisions, before acceptance of the completed works, Employer shall verify and assure that such works are within the set objective, quality and appropriate to operate and use.
7.2	**Taking-Over Notice**	The Employer shall notify the Contractor when he considers that the Contractor has completed the Works stating the date accordingly. Alternatively, the Employer may notify the Contractor that the Works, although not fully complete, are ready for taking over, stating the date accordingly. The Employer shall take over the Works upon the issue of this notice. The Contractor shall promptly complete any outstanding work and, subject to Clause 8, clear the Site.
8.	**Remedying Defects**	
8.1	**Remedying Defects**	The Employer may at any time prior to the expiry of the period stated in the SCC, notify the Contractor of any defects or outstanding work. The Contractor shall remedy at no cost to the Employer any defects due to the Contractor's design, materials, plant or workmanship not being in accordance with the Contract. Failure to remedy any defects or complete outstanding work within a reasonable time of the Employer's notice shall entitle the Employer to carry out all necessary work at the Contractor's cost.
8.2	**Uncovering and Testing**	The Employer may give instruction as to the uncovering and/or testing of any work. Unless as a result of any uncovering and/or testing it is established that the contractor's design, materials, plant or workmanship are not in accordance with the Contract, the Contractor shall be paid for such uncovering and/or testing as a Variation in accordance with Sub-Clause 9.2.
9.	**Variations and Claims**	
9.1	**Right to Vary**	The Employer may instruct Variations.

9.2 Valuation of Variations	Variations shall be valued as follows: a. where appropriate, at rates in the Contract, or b. in the absence of appropriate rates, the rates in the Contract shall be used as the basis for valuation or c. at appropriate new rates, as may be agreed or which the Employer considers appropriate.
9.4 Right to Claim	If the contractor incurs cost as a result of any of the Employer's Liabilities, the contractor shall be entitled to the amount of such cost. If as a result of any of the Employer's Liabilities, it is necessary to change the Works, this shall be dealt with as a Variation.
9.5 Variation and Claim Procedure	The contractor shall submit the Employer an itemised make-up of the value of Variations and claims within 7 days of the instruction or of the event giving rise to the claim. The Employer shall check and if possible agree the value. In the absence of agreement, the Employer shall determine the value.
10. Contract Price and Payment	
10.1 Valuation of the Works	The Contract Bill of Quantities and the approved Variation quantities shall be used to calculate the valuation of the works completed .The Contractor shall be paid for the quantity of work done at the rate in the Bill of Quantities or rate agreed pursuant to clause 9.2 for varied works.
10.2 Payments Certificates	The Contractor shall submit to the Employer monthly statements of the estimated value of the works completed less the cumulative amount certified previously. The Employer shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor
10.3 Payments	The Employer shall pay to the contractor the amount certified less retention at the rate stated in the SCC within 30 days of the date of each certificate.
10.4 Payment of Retention	One half of the retention shall be repaid by the Employer to the contractor within 30 days upon expiry of Defects Liability Period and the Employer has certified that the notified defects have been corrected. The remainder of the retention shall be paid by the Employer to the contractor within 7 days after submission of evidence document from the concerned Internal Revenue Office that the contractor has submitted his Income Returns
10.5 Advance Payment	10.5.1 The Employer shall make advance payment to the Contractor of the amounts stated in the SCC in two equal installments by the date stated in the SCC, against provision by the Contractor of an unconditional bank guarantee from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal in a form acceptable to the Employer in amounts equal to the advance payment. The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest shall not be charged on the advance payment.

	10.5.2 The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Project Manager. 10.5.3 The advance payment shall be repaid by deducting proportionate amounts, as stated in SCC, from payments otherwise due Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation Events, Bonuses, or Liquidated Damages.
10.6 Local Taxation & Value Added Tax	a. The prices quoted by the Contractor shall include all taxes that may be levied in accordance to the laws and regulations in being in Nepal. b. The Contractor shall pay VAT in the concerned VAT office within time frame specified in VAT regulation.
11. Termination of Contract and Payment	11.1 The Employer may terminate the Contract at any time if the contractor; a. does not commence the work as per the Contract, b. abandons the work without completing, c. fails to achieve progress as per the Contract. 11.2 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract. 11.3 Fundamental breaches of Contract shall include, but shall not be limited to, the following : (a) The Contractor uses the advance payment for matters other than the contractual obligations, (b) the Contractor stops work for 30 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Project Manager; (c) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 30 days; (d) the Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation. (e) a payment certified by the Project Manager is not paid by the Employer to the Contractor within 90 days of the date of the Project Manager's certificate; (f) the Project Manager gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager; (g) The Contractor fails to update the Program as per the contract and demonstrate acceleration of the works within a reasonable period of time determined by the Project Manager; (h) the Contractor does not maintain a Security, which is required; (i) the Contractor has delayed the completion of the Works by the number of

	days for which the maximum amount of liquidated damages can be paid, **as defined in the SCC 6.4** ; and (j) If the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract. 11.5 Notwithstanding the above, the Employer may terminate the Contract for convenience. 11.6 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.
	11.7 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Project Manager shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer. 11.8 If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Project Manager shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate. 11.9 If the Contract is terminated because of fundamental breach of Contract or for any other fault by the Contractor, the performance security shall be forfeited by the Employer. In such case, amount to complete the remaining works as per the Contract shall be recovered from the Contractor as Government dues.
12. Risk and Responsibility	
12.1 Contractor's Care of the Works	The contractor shall take full responsibility for the care of the Works from the Commencement Date until the date of the Employer's notice under Sub-Clause 7.2. Responsibility shall then pass to the Employer. If any loss or damage occurs to the Works during the above period, the contractor shall rectify such loss or damage so that the Works conform to the Contract.
12.2 Force Majeure	If a Party is or shall be prevented from performing any of its obligations by Force Majeure, the Party affected shall notify the other Party immediately. If necessary, the contractor shall suspend the execution of the Works and, to the extent agreed with the Employer, demobilise the contractor's Equipment. If the event continues for a period of 90 days, either Party may then give notice of termination which shall take effect 30 days after the giving of the notice. After termination, the contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following: a. any sums to which the contractor is entitled under Sub-Clause 9.4,

	b. the Cost of his suspension and demobilisation, c. any sums to which the Employer is entitled. The net balance due shall be paid or repaid within 30 days of the notice of termination.
13. Resolution of Disputes	
13.2 Amicable Settlement	The Employer and the Contractor shall attempt to settle amicably by direct negotiation any disagreement or dispute arising between them under or in connection with the Contract.
14.Conduct of Bidders	14.1 The Bidder shall be responsible to fulfill his obligations as per the requirement of the Contract Agreement, Bidding documents, GoN's Procurement Act and Regulations. 14.2 The Bidder shall not carry out or cause to carry out the following acts with an intention to influence the implementation of the procurement process or the procurement agreement : a) give or propose improper inducement directly or indirectly, b) distortion or misrepresentation of facts c) engaging or being involved in corrupt or fraudulent practice d) interference in participation of other prospective bidders. e) coercion or threatening directly or indirectly to cause harm to the person or the property of any person to be involved in the procurement proceedings, f) collusive practice among bidders before or after submission of bids for distribution of works among bidders or fixing artificial/uncompetitive bid price with an intention to deprive the Employer the benefit of open competitive bid price.. g) contacting the Employer with an intention to influence the Employer with regards to the bid or interference of any kind in examination and evaluation of the bids during the period after opening of bids up to the notification of award of contract
15. Blacklisting Bidder	15.1 Without prejudice to any other right of the Employer under this Contract, GoN, Public Procurement Monitoring Office may blacklist a bidder for his conduct up to three years on the following grounds and seriousness of the act committed by the bidder: a) if it is proved that the bidder committed acts pursuant to the Sub - Clause 14.2, b) if it is proved later that the bidder/contractor had committed substantial defect in implementation of the contract or had not substantially fulfilled his obligations under the contract or the completed work is not of the specified quality as per the contract , c) if convicted by a court of law in a criminal offence which disqualifies the bidder from participating in the contract. d) if it is proved that the contract agreement signed by the bidder was

	based on false or misrepresentation of bidder's qualification information, **e) other acts mentioned in the Bidding Data** 15.2 A firm declared blacklisted and ineligible by the GON shall be ineligible to bid for a contract during the period of time determined by the PPMO.
16. Provision of PPA and PPR	If any provision of this document are inconsistent with Public Procurement Act (PPA), 2063 or Public Procurement Regulations (PPR), 2064, the provision of this documents shall be void to the extent of such inconsistency and the provision of PPA and PPR shall prevail.

Section - V
Special Conditions of Contract

Section VIII - Special Conditions of Contract (SCC)

This SCC forms part of the Agreement
[Note: with the exception of the items for which the Purchaser's requirements have been inserted, the Bidder shall complete the following information before submitting his Sealed Quotation.]

1.1.1	Documents forming the Contract listed in the order of priority: 1. The Agreement 2. Special Conditions of Contract 3. General Conditions of Contract 4. The Technical Specifications 5. The Drawings 6. The Bill of Quantities
1.1.12	The indented completion date for the works shall be 30-06-2025 .
1.5	The language of the contract is ENGLISH/NEPALI.
2.1	The Site Possession Date(s) shall be: 2 days after signing the contract
3.1	The Authorised person is : Bina Maharjan
3.2	Name and Address of Employer's representative is : Buddha Maharjan reviewer, Kirtipur Kathmandu Bagmati Province Kirtipur
4.4	The Performance Security amount is: : % i) If bid price of the bidder selected for acceptance is up to 15 (fifteen) percent below the approved cost estimate, the performance security amount shall be 5 (five) percent of the bid price. ii) For the bid price of the bidder selected for acceptance is more than 15 (fifteen) percent below of the cost estimate, the performance security amount shall be determined as follows: Performance Security Amount = [(0.85 x Cost Estimate –Bid Price) x 0.5] + 5% of Bid Price. The Bid Price and Cost Estimate shall be inclusive of Value Added Tax
6.2	Time for the submission of programme : 7 days.
6.4	Liquidated Damages for Delay is 0.05% of the Contract Price per day up to a maximum of 10% of sum stated in the Agreement.
8.1	Period for notifying defects is 365 days calculated from the date stated in the notice under Sub-Clause 7.2.
10.5.1	The Advance Payments shall NOT be applicable
10.5.3	Deductions from Payment Certificates will commence in the first certificate in which the Value of works executed exceeds 30% of the Contract Price. Deduction will be at the rate of 0% of the respective Monthly Interim Payment Certificate until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the end of 80 % of the approved contract price.

Section - IX
Contract Forms

Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

Letter of Acceptance

[on letterhead paper of the Employer]

Date: ……..

To: ……. name and address of the Contractor ……..

Subject: ……. Notification of Award

This is to notify that your Quotation dated ……..date ……..for execution of the……..name of the contract and identification number, as given in the SCC …….. for the Contract price of Nepalese Rupees [insert amount in figures and words in Nepalese Rupees], as corrected in accordance with the Instructions to Bidders is hereby accepted in accordance with the Instruction to Bidders.

You are hereby instructed to contact this office to sign the formal contract agreement within 7 days with Performance Security of ……..[specify the performance security amount computed as per ITB 22.2 and 25.1] consisting of a Bank Guarantee in the format included in Section IX (Contract Forms) of this Bidding Document.

The Employer shall forfeit the bid security, in case you fail to furnish the Performance Security and to sign the contract within specified period.

Authorized Signature: ……..

Name and Title of Signatory: ……

Contract Agreement

THIS AGREEMENT made the .....day of …….. between…….. name of the Employer …….. (hereinafter "the Employer"), of the one part, and ……name of the Contractor ……(hereinafter "the Contractor"), of the other part:

WHEREAS the Employer desires that the Works known as …….. name of the Contract .....should be executed by the Contractor, and has accepted a Quotation by the Contractor for the execution and completion of these Works and the remedying of any defects in the sum of NRs ……..[insert amount of contract price in words and figures including taxes] (hereinafter "the Contract Price").

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement.
   (a) the Letter of Acceptance;
   (b) the Letter of Bid;
   (c) the Addenda Nos ..... insert addenda numbers if any ……
   (d) the Special Conditions of Contract;
   (e) the General Conditions of Contract;
   (f) Bills of Quantities (BOQ);
   (g) the Specification;
   (h) the Drawings;
   (i) the Activity Schedules; and
   (j).....[***Specify if there are any other document***]
3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

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

Signed by …….
for and on behalf the Contractor in the presence of

Witness, Name Signature, Address, Date

Signed by……..
for and on behalf of the Employer in the presence of

Witness, Name, Signature, Address, Date

Performance Security

Bank's Name, and Address of Issuing Branch or Office
(On Letter head of the Commercial bank or any Financial Institution eligible to issue Bank Guarantee as per prevailing Law)

…… ***Bank's Name, and Address of Issuing Branch or Office*** ……Beneficiary: …… Name and Address of Employer ……
Date: ……

Performance Guarantee No.:……

We have been informed that … … ***[insert name of the Contractor]*** (hereinafter called "the Contractor") has been notified by you to sign the Contract No. …… ***[insert reference number of the Contract]*** for the execution of ……. ***[insert name of contract and brief description of Works]*** (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we… …… . ***[insert name of the Bank]*** hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ……***[insert name of the currency and amount in figures*] (… ……. insert amount in words)*** such sum being payable in Nepalese Rupees, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the……..Day of …… **, and any demand for payment under it must be received by us at this office on or before that date.

……
Seal of Bank and Signature(s)

Note:
All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.

* The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract in Nepalese Rupees.

** Insert the date thirty days after the date specified for the Defect Liability Period. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee".

Advance Payment Security

Bank's Name, and Address of Issuing Branch or Office

(On Letter head of the Commercial bank or any Financial Institution eligible to issue Bank Guarantee as per prevailing Law)

…….. Bank's Name, and Address of Issuing Branch or Office.....

Beneficiary: ……***Name and address of employer***

Date : ……

Advance Payment Guarantee No……..

We have been informed that ……has entered into Contract No. ….. ***Name and Address of Employer***……***name of the Contractor***……(hereinafter called "the Contractor")..reference number of the Contract……dated …… with you, for the execution of ...contract and brief description of Works ……. (hereinafter called "the Contract").

Furthermore, we understand that, according to the Conditions of the Contract, an advance payment in the sum…… name of the currency and amount in figures****…(…. amount in words …..)*** is to be made against an advance payment guarantee.

At the request of the Contractor, we... ..... . ***name of the Bank*** …… hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of……name of the currency and amount in figures****……(…… amount in words … ….. .)***upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that eighty (80) percent of the Contract Price has been certified for payment, or on the ..... day of .....**, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

……

Seal of Bank and Signature(s)

Note:

All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.

*The Guarantor shall insert an amount representing the amount of the advance payment in Nepalese Rupees of the advance payment as specified in the Contract.

** Insert the date Thirty days after the expected completion date. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee".