BIDDING DOCUMENT

for

THE PROCUREMENT OF

Construction of intake,5 m3 tank,pump house,casing well ,Laying & jointing work of Hdpe pipe of Tutkhel Latteshwori Mahadev Pani Muhan Dekhi Budabas Water Supply Lift Project

National Competitive Bidding (NCB)

IFB No: CONS/NCB/RCH/20/2081/82

Contract Identification No. : CONS/NCB/RCH/20/2081/82

Water Supply And Sanitation Division No. 4, Ramechhap

Issued on: 25-04-2025 00:00

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

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Invitation for Bids

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Water Supply And Sanitation Division No. 4, Ramechhap

Invitation for Bids No.: CONS/NCB/RCH/20/2081/82

Date of publication: 25-04-2025 00:00

1. Water Supply And Sanitation Division No. 4, Ramechhap invites sealed bids or electronic bids from Nepalese eligible bidders for the construction of Construction of intake,5 m3 tank,pump house,casing well ,Laying & jointing work of Hdpe pipe under National Competitive Bidding procedures.
The estimated amount for the works is Rs. (in NRs) 2664940.42 (Exclusive of VAT and Contingencies)

2. Eligible Bidders may obtain further information and inspect the bidding document at the office of Water Supply And Sanitation Division No. 4, Ramechhap, Manthali, Ramechhap, Manathali, Ramechhap, Bagmati Province, Nepal or may visit PPMO website www.bolpatra.gov.np/egp.

3. Bidder who chooses to submit their bid electronically may purchase the hard copy of the bidding documents as mentioned above or may download the bidding documents for e-submission from PPMO's Web Site www. bolpatra.gov.np./egp,. Bidders, submitting their bid electronically, should deposit the cost(as specified above) of bidding document in the Project's Rajaswa (revenue) account as specified below and the scanned copy (pdf format) of the Bank deposit voucher shall be uploaded by the bidder at the time of electronic submission of the bids. Information to deposit the cost of bidding document in Bank:

Name of the Bank:	Rastriya Banijya Bank Ltd.
Name of Office:	Water Supply And Sanitation Division No. 4, Ramechhap
Office Code no:	3130224013
Office Account no:	1000100200010000
Rajaswa (revenue) Shirshak no.:	14229

4. Pre-bid meeting shall be held at Water Supply And Sanitation Division No. 4, Ramechhap
Manthali, Ramechhap
Manathali, Ramechhap
Bagmati Province
Nepal at 11-05-2025 14:00 hours.

5. Sealed or electronic bids must be submitted to the office Water Supply And Sanitation Division No. 4, Ramechhap, Manthali, Ramechhap, Manathali, Ramechhap, Bagmati Province, Nepalby hand/courier or through PPMO website www.bolpatra.gov.np/egp on or before 25-05-2025 12:00. Bids received after this deadline will be rejected.

6. The bids will be opened in the presence of Bidders' representatives who choose to attend at 25-05-2025 14:00 at the office of Water Supply And Sanitation Division No. 4, Ramechhap
Manthali, Ramechhap
Manathali, Ramechhap
Bagmati Province
Nepal. Bids must be valid for a period of 90 days after bid opening and must be accompanied by a bid security or scanned copy of the bid security in .pdf format in case of e-bid, amounting to a minimum of NRs. 85000.0, which shall be valid for 30 days beyond the validity period of the bid.

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.

Part - I Bidding Procedures

Section I – Instruction to Bidders

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SECTION– I: Instructions to Bidders

A. General	
1. Scope of Bid	1.1 In connection with the Invitation for Bids indicated in the **Bid Data Sheet (BDS)**, the Employer, as indicated **in the BDS**, issues this Bidding Document for the procurement of Works as specified in Section V (Works Requirements). The name, identification, and number of Contracts of the National Competitive Bidding (NCB) are provided **in the BDS.**
	1.2 Throughout this Bidding Document: (a) the term "in writing" means communicated in written form and delivered against receipt; (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and (c) "day" means calendar day.
2. Source of Funds	2.1 GoN Funded: In accordance with its annual program and budget, approved by the GoN, the implementing agency indicated **in the BDS** plans to apply a portion of the allocated budget to eligible payments under the contract(s) for which this Bidding Document is issued. Or Public Entities' own Resource Funded: In accordance with its annual program and budget, approved by the public entity, the implementing agency indicated **in the BDS** plans to apply a portion of the allocated budget to eligible payments under the contract(s) for which this Bidding Document is issued. Or DP Funded: The GoN has applied for or received financing (hereinafter called "funds") from the Development Partner (hereinafter called "the DP") indicated **in the BDS** toward the cost of the project named in the BDS. The GoN intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding Document is issued.
	2.2 DP Funded: Payment by the DP will be made only at the request of the GoN and upon approval by the DP in accordance with the terms and conditions of the financing agreement between the GoN and the DP (hereinafter called the "Loan/Grant Agreement"), and will be subject in all respects to the terms and conditions of that Loan/Grant Agreement. No party other than the GoN shall derive any rights from the Loan Agreement or have any claim to the funds.
3. Fraud and Corruption	3.1 Procuring Entities as well as bidders, suppliers and contractors and their sub-contractors under GoN/DP-financed contracts, shall adhere to the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this; (a) the Employer adopts, for the purposes of this provision, the terms as defined below: (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party; (ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an

	obligation; (iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party; (iv) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party. v) "obstructive practice" means (a) deliberately destroying, falsifying, altering, or concealing of evidence material to an investigation; (b) making false statements to investigators in order to materially impede an investigation; (c) failing to comply with requests to provide information, documents, or records in connection with an investigation; (d) threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or (e) materially impeding GoN/DP's contractual rights of audit or access to information; and vi) "integrity violation" is any act which violates Anticorruption Policy, including (i) to (v) above and the following: abuse, conflict of interest, violations of GoN/DP sanctions, retaliation against whistleblowers or witnesses, and other violations of Anticorruption Policy, including failure to adhere to the highest ethical standard. (b) the Employer will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for the contract; (c) DP will cancel the portion of the financing allocated to a contract if it determines at any time that representative(s) of the GoN or of a beneficiary of DP-financing engaged in corrupt, fraudulent, collusive, or coercive practices or other integrity violations during the procurement or the execution of that contract, without the GoN having taken timely and appropriate action satisfactory to DP to remedy the situation. (d) DP will impose remedial actions on a firm or an individual, at any time, in accordance with DP's Anticorruption Policy and related Guidelines (as amended from time to time), including declaring ineligible, either indefinitely or for a stated period of time, to participate in DP-financed, -administered, or -supported activities or to benefit from an DP-financed, -administered, or -supported contract, financially or otherwise, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations; and (e) The Contractor shall permit the GoN/DP to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the GoN/DP, if so required by the GoN/DP.
	3.2 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 in corrupt or fraudulent practice or involving in such act, (d) interference in participation of other competing 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 bids or interference of any kind in examination and evaluation of the bids during the period from the time of opening of the bids until the notification of award of contract.
	3.3 PPMO, on the recommendation of the Procuring Entity may blacklist a Bidder for a period of one (1) to three (3) years for its conduct including on the following grounds and seriousness of the act committed by the bidder: (a) if convicted by a court of law in a criminal offence which disqualifies the Bidder from participating in the contract, (b) if it is established that the contract agreement signed by the Bidder was based on false or misrepresentation of Bidder's qualification information, (c)if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for, or in executing, a GoN/DP-financed contract. (d) if the successful bidder fails to sign the contract.
	3.4 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. 3.5 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.
	3.6 Furthermore, Bidders shall be aware of the provisions of GCC (GCC 28.3 and 72.3(j).
4. Eligible Bidders	4.1 A Bidder may be a natural person, private entity, or government - owned entity—subject to ITB 4.5—or any combination of them in the form of a Joint Venture (JV) under an existing agreement, or with the intent to constitute a legally-enforceable joint venture. In the case of a JV: (a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms. Maximum number of JV shall be as specified **in the BDS**. The eligibility criteria requirement of the parties to the JV shall be as specified in Section III Evaluation and Eligibility Criteria, and (b) the JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the JV during the bidding process and, in the event the JV is awarded the Contract, during Contract execution.
	4.2 A Bidder, and all parties constituting the Bidder, shall have the nationality of any country

	or eligible countries mentioned **in the BDS**. A Bidder shall be deemed to have the nationality of a country if the Bidder is a citizen or is constituted, or incorporated, and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed sub Contractors or suppliers for any part of the Contract including related services.
	4.3 A Bidder shall not have a conflict of interest. A Bidder found to have a conflict of interest shall be disqualified. if any of, including but not limited to, the following apply: (a) they have controlling partners in common; or (b) they receive or have received any direct or indirect subsidy from any of them; or (c) they have the same legal representative for purposes of this bid; or (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or improperly influence on the Bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or (e) a Bidder participates in more than one bid in this bidding process either individually or as a partner in a joint venture. This will result in the disqualification of all Bids in which it is involved. However, subject to any finding of a conflict of interest in terms of ITB 4.3 (a)-(d) above, this does not limit the participation of the same subcontractor in more than one bid; or (f) a Bidder or any of its affiliated entity, participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the Bid; or (g) a Bidder was affiliated with a firm or entity that has been hired (or is proposed to be hired) by the Employer as Engineer for the Contract.
	4.4 A firm that is under a declaration of ineligibility by the GoN/DP in accordance with ITB 3, at the date of the deadline for bid submission or thereafter, shall be disqualified. A firm shall not be eligible to participate in any procurement activities under an DP-financed, -administered, or -supported project while under temporary suspension or debarment by DP pursuant to the DP's Anticorruption Policy (see ITB 3), whether such debarment was directly imposed by the DP, or enforced by other DPs pursuant to the Agreement for Mutual Enforcement of Debarment Decisions. A bid from a temporary suspended or debarred firm will be rejected.
	4.5 Enterprises owned by Government shall be eligible only if they can establish that they are legally and financially autonomous and operate under commercial law, and that they are not a dependent agency of the GoN.
	4.6 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request.

	4.7 Firms shall be excluded in any of the cases, if (a) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, Nepal prohibits any import of goods or Contracting of works or services from that country or any payments to persons or entities in that country. (b) DP Funded: as a matter of law or official regulation, Nepal prohibits commercial relations with that country, provided that the DP is satisfied that such exclusion does not preclude effective competition for the supply of goods or related services required; (c) DP Funded: a firm has been determined to be ineligible by the DP in relation to their guidelines or appropriate provisions on preventing and combating fraud and corruption in projects financed by them.
	4.8 Maximum number of bidding process that a Bidder, and all parties constituting the Bidder can participate shall be as specified in BDS. The bidders shall be considered ineligible if number of participation in bidding process exceeds the number as specified.
5. Eligible Materials, Equipment and Services	5.1 The materials, equipment and services to be supplied under the Contract shall have their origin in any source countries as defined in ITB 4.2 above and all expenditures under the Contract will be limited to such materials, equipment, and services. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services.
	5.2 For purposes of ITB 5.1 above, "origin" means the place where the materials and equipment are mined, grown, produced or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that differs substantially in its basic characteristics or in purpose or utility from its components.
B. Contents of Bidding Documents	
6. Sections of Bidding Document	6.1 The Bidding Document consist of Parts I, II, and III, which include all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8. PART I Bidding Procedures Section I Instructions to Bidders (ITB) Section II Bid Data Sheet (BDS) Section III Evaluation and Eligibility Criteria (EEC) Section IV Bidding Forms (BDF) PART II Requirements Section V Works Requirements (WRQ) Section VI Bill of Quantities (BOQ) PART III Conditions of Contract and Contract Forms Section VII General Conditions of Contract (GCC) Section VIII Special Conditions of Contract (SCC) Section IX Contract Forms (COF)

	6.2 The Invitation for Bids issued by the Employer is not part of the Bidding Document.
	6.3 The Employer is not responsible for the completeness of the Bidding Document and their Addenda, if they were not obtained directly from the source stated by the Employer in the Invitation for Bids.
	6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document and to furnish with its bid all information and documentation as is required by the Bidding Documents. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.
7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting	7.1 A prospective Bidder requiring any clarification of the Bidding Document shall contact the Employer in writing at the Employer's address indicated **in the BDS** or raise any question or curiosity during the pre-bid meeting if provided for in accordance with ITB 7.4. The Employer will respond in writing to any request for clarification, provided that such request is received within the period as mentioned in ITB 7.5. The Employer shall forward copies of its response to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3, including description of the inquiry but without identifying its source. Should the Employer deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 17.2
	7.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself, on its own risk and responsibility, all information that may be necessary for preparing the bid and entering into a Contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.
	7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
	7.4 The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for **in the BDS.** The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage. 7.5 The Bidder is requested, as far as possible, to submit any questions in writing, to reach the Employer as mentioned **in BDS**.
	7.5 The Bidder is requested, to submit any questions in writing, to reach the Employer as mentioned **in BDS**.
	7.6 Minutes of the pre-bid meeting, including the text of the questions raised, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3. Any modification to the Bidding Document that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting.
	7.7 Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.
8. Amendment of Bidding Document	8.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Document by issuing agenda.

	8.2 Any addendum issued shall be part of the Bidding Document and shall be communicated in writing to all who have obtained the Bidding Document from the Employer in accordance with ITB 6.3.
	8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB 19.2
C. Preparation of Bids	
9. Cost of Bidding	9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
10. Language of Bid	10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the language specified **in the BDS**. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified **in the BDS**, in which case, for purposes of interpretation of the Bid, such translation shall govern.
11. Documents Comprising the Bid	11.1 The Bid shall comprise the following: (a) Letter of Bid; (b) completed Bill of Quantities (BoQ), in accordance with ITB 12 and ITB 13, or as stipulated **in the BDS**; (c) Bid Security, in accordance with ITB 16; (d) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 17.2; (e) documentary evidence of establishing the Bidder's eligibility; (f) Bids submitted by a Joint Venture shall include a copy of the Joint Venture Agreement entered into by all partners. Alternatively, a Letter of Intent to execute a Joint Venture Agreement in the event of a successful Bid shall be signed by all partners and submitted with the Bid, together with a copy of the proposed agreement. The Joint Venture agreement, or letter of intent to enter into a Joint Venture including a draft agreement shall indicate at least the parts of the Works to be executed by the respective partners; and (h) any other required documents, which is not against the provision of Procurement Act/Regulation/Directives and Standard Bidding Document issued by PPMO as specified in the BDS.
	11.2 The Bidder is solely responsible for the authenticity of the submitted documents.
12. Letter of Bid and Schedules	12.1 The Letter of Bid, Schedules, and all documents listed under ITB 11, shall be prepared using the relevant forms in Section IV (Bidding Forms) and in Section VI (Bill of Quantities).The forms must be completed without any alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.
13. Bid Prices and Discounts	13.1 The prices and discounts quoted by the Bidder in the Letter of Bid and in the Schedules shall conform to the requirements specified below.
	13.2 The Bidder shall submit a bid for the whole of the works described in ITB 1.1 by filling in prices for all items of the Works, as identified in Section VI (Bill of Quantities).

	In case of Unit Rate Contracts, the Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bill of Quantities.
	13.3 The price to be quoted in the Letter of Bid shall be the total price of the Bid, excluding any discounts offered. Absence of the total price in the Letter of Bid or the Bid Price in the Bill of Quantities shall result in rejection of the Bid.
	13.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Bid, in accordance with ITB 12.1.
	13.5 If so indicated in ITB 1.1, bids are invited for individual Contracts or for any combination of Contracts (packages). Bidders wishing to offer any price reduction for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Price reductions or discounts shall be submitted in accordance with ITB 13.4, provided the bids for all Contracts are submitted and opened at the same time.
	13.6 Unless otherwise provided **in the BDS** and the Conditions of Contract, the prices quoted by the Bidder shall be fixed. If the prices quoted by the Bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, the Bidder shall furnish the indices and weightings for the price adjustment formulae in the Table of Adjustment Data in Section IV (Bidding Forms) and the Employer may require the Bidder to justify its proposed indices and weightings.
	13.7All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 30 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total bid price submitted by the Bidder.
14. Currency of Bid and Payment	14.1 The currency of the bid and payment shall be in Nepalese Rupees.
15. Period of Validity of Bids	15.1 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.
	15.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 16, it shall also be extended 30 days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid and to include any additional conditions against the provisions specified in Bid Documents.
16. Bid Security	16.1 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.

	16.2 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 IV (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, or beyond any period of extension if requested under ITB 15.2.
	16.3 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.
	16.4 The bid security of unsuccessful Bidders shall be returned within three days, once the successful bidder has furnished the required performance security and signed the Contract Agreement pursuant to ITB 34.1and 35.1.
	16.5 The bid security shall be forfeited if: (a) a Bidder requests for withdrawal or modification of its bid, except as provided in ITB 15.2: (i) during the period of bid validity specified by the Bidder on the Bid, in case of electronic submission; (ii) from the period twenty-four hours prior to bid submission deadline up to the period of bid validity specified by the Bidder on the Letter of Bid, in case of hard copy submission. (b) a Bidder changes the prices or substance of the bid while providing information pursuant to clause ITB 24.1; (c) a Bidder involves in fraud and corruption pursuant to clause 3.1; (d) the successful Bidder fails to: (i) furnish a performance security in accordance with ITB 34.1; or (ii) sign the Contract in accordance with ITB 35.1 (iii) accept the correction of arithmetical errors pursuant to clause 28.1;
	16.6 The Bid Security of a JV shall be in the name of the JV that submits the bid. If the JV has not been legally constituted at the time of bidding, the Bid Security shall be in the names of all future partners as named in the letter of intent mentioned in ITB 4.1.
17. Format and Signing of Bid	17.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 11 and clearly mark it ORIGINAL". In addition, the Bidder shall submit copies of the bid in the number specified **in the BDS**, and clearly mark each of them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail. In case of e-submission of bid, the Bidder shall submit his bid electronically in PDF or web forms files as specified in ITB Clause 18.1(b),
	17.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified **in the BDS** and shall be attached to the bid. The name and position held by each person signing the authorization must be

	typed or printed below the signature. All pages of the bid, except for un amended printed literature, shall be signed or initialed by the person signing the bid.
	17.3 Any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.
D. Submission and Opening of Bids	
18. Sealing and Marking of Bids	18.1 Unless otherwise specified **in BDS**, Bidders shall submit their bids by electronic or by mail/by hand/by courier. Procedures for submission, sealing and marking are as follows: (a) Bidders submitting bids by mail, by hand or by courier i. Bidders shall enclose the original and each copy of the Bid. These envelopes containing the original and the copies shall then be enclosed in one single envelope. ii. The inner and outer envelopes shall: (aa) bear the name and address of the Bidder; (bb) be addressed to the Employer as provided **in BDS**19.1; (cc)bear the specific identification of this bidding process indicated **in BDS** 1.1; and (dd) bear a warning not to open before the time and date for bid opening. iii. If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the bid. (b) Bidders submitting Bids electronically shall follow the electronic bid submission procedure specified **in BDS**.
19. Deadline for Submission of Bids	19.1 Bids must be received by the Employer at the address and no later than the date and time indicated **in the BDS**. In case of e-submission, the standard time for e-submission is Nepalese Standard Time as set out in the server. The e-procurement system will accept the e-submission of bid from the date of publishing of notice and will automatically not allow the e-submission of bid after the deadline for submission of bid.
	19.2 The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.
20. Late Bids	20.1 The Employer shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 19. Any bid received by the Employer after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder.
21. Withdrawal, and Modification of Bids	21.1 A Bidder may withdraw, or modify its bid after it has been submitted either in hard copy or by e-submission. Procedures for withdrawal or modification of submitted bids are as follows: (i) Bids submitted in hard Copy a) Bidders may withdraw or modify its bids by sending a written notice in a sealed envelope, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 17.2 before 24 hours prior to the last deadline of submission of bid. The corresponding modification of the bid must accompany the respective written notice. All notices must be: (aa) prepared and submitted in accordance with ITB 17 and ITB 18,and in

	addition, the respective envelopes shall be clearly marked "WITHDRAWAL", "MODIFICATION;" and (bb) received by the Employer twenty four hour hours prior to the deadline prescribed for submission of bids, in accordance with ITB 19. ii) E-submitted bids. a) Bidder may submit modification or withdrawal prior to the deadline prescribed for submission of bids through e-GP system by using the forms and instructions provided by the system.
	21.2. Bids requested to be withdrawn in accordance with ITB 21.1 shall not be opened. In case of hard copy submission, the Bid will be returned unopened to the Bidders.
	21.3 Except in case of any modification or correction in bid document made by procuring entity, Bidder may submit request for withdrawal or modification only one time. 21.4 In case of hard copy bid, no bid may be withdrawn if the bid has already been modified; except in case of any modification or correction in bid document by procuring entity.
	21.5 Request for withdrawal or modification must be made through the same medium of submission. Request for withdrawal or modifications through different medium shall not be considered.
	21.6 The following provisions apply for withdrawal or modification of the Bids: (i) In case of bids submitted in hard copy no bid shall be withdrawn or modified in the interval between 24 hours prior to the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof. (ii) In case of e-submitted bids no bids shall be withdrawn or modified in the interval between deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof.
	21.7 Once a Bid is withdrawn, bidder will not be able to submit another bid for the same bid.
22. Bid Opening	22.1 The Employer shall open the bids in public at the address, date and time specified **in the BDS** in the presence of Bidders` designated representatives who choose to attend.
	22.2 The Employer shall download the e-submitted bid files. The e-procurement system allows the Employer to download the e-submitted bid files (report) only after bid opening date and time after login simultaneously by two members of the Bid opening committee.
	22.3 Electronically submitted bid shall be opened at first in the same time and date as specified above. Electronic Bids shall be opened one by one and read out. The e-submitted bids must be readable through open standards interfaces. Unreadable and or partially submitted bid files shall be considered incomplete.
	22.4 Thereafter, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with the corresponding bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be Permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening. Next, envelopes marked "MODIFICATION" shall be opened and read out with the corresponding bid. No bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read

	out at bid opening. Only envelopes that are opened and read out at bid opening shall be considered further.
	22.5 All other envelopes shall be opened one at a time, reading out: the name of the Bidder; the Bid Price(s), including any discounts and alternative bids and indicating whether there is a modification; the presence of a bid security and any other details as the Employer may consider appropriate. Only discounts and alternative offers read out at bid opening shall be considered for evaluation. No bid shall be rejected at bid opening except for late bids, in accordance with ITB 20.1.
	22.6 The Employer shall prepare a record of the bid opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, or modification; the Bid Price, per Contract if applicable, including any discounts and alternative offers; and the presence or absence of a bid security. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record.
E. Evaluation and Comparison of Bids	
23. Confidentiality	23.1 Information relating to the examination, evaluation, comparison, and recommendation of Contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders.
	23.2 Any attempt by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its bid.
	23.3 Notwithstanding ITB 23.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it may do so in writing.
24. Clarification of Bids	24.1 To assist in the examination, evaluation, and comparison of the bids, the Employer may, at its discretion, ask any Bidder for a clarification of its bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the prices or substance of the bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids, in accordance with ITB 28. 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 11.1 for verification of submitted documents for acceptance of the e-submitted bid.
	24.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.
25. Deviations, Reservations, and Omissions	25.1 During the evaluation of bids, the following definitions apply: (a) "Deviation" is a departure from the requirements specified in the Bidding Document; (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and (c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.
26. Determination of Responsiveness	26.1 The Employer's determination of a bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.
	26.2 A substantially responsive bid is one that meets the requirements of the Bidding

	Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that, (a) if accepted, would: (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.
	26.3 If a bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.
	26.4 In case of e-submission bids, the Employer evaluates the bid on the basis of the information in the electronically submitted bid files. If the Bidder cannot substantiate or provide evidence to establish the information provided in e-submitted bid through documents/ clarifications as per ITB Clause 24.1, the bid shall not be considered for further evaluation.
	26.5 In Case, a 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 from the evaluation, if public entity receives instruction from Government of Nepal.
27. Nonconformities, Errors, and Omissions	27.1 Provided that a bid is substantially responsive, the Employer may waive any non-conformities in the bid that do not constitute a material deviation, reservation, or omission.
	27.2 Provided that a bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the bid. Failure of the Bidder to comply with the request may result in the rejection of its bid.
	27.3 Provided that a bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. The adjustment shall be made using the methods indicated in Section III (Evaluation and Eligibility Criteria).
	27.4 If the monetary value of such non-conformities is found to be more than fifteen percent of the Bid Price of the bidder on account of minor discrepancies pursuant to ITB 27.3, such bid shall be considered non responsive and shall not be involved in evaluation.
28. Correction of Arithmetical Errors	28.1 Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis: (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.
	28.2 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.
29. Evaluation of Bids	29.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.
	29.2 To evaluate a bid, the Employer shall consider the following: (a) the bid price, excluding Value Added Tax , Provisional Sums, and the provision, if any, for contingencies in the Summary Bill of Quantities, for Unit Rate Contracts, or Schedule of Prices for lump sum Contracts, but including Day work items, where priced competitively; (b) price adjustment for correction of arithmetic errors in accordance with ITB 28.1; (c) price adjustment due to discounts offered in accordance with ITB 13.4; (d) adjustment for nonconformities in accordance with ITB 27.3; (e) application of all the evaluation factors indicated in Section III (Evaluation and Eligibility Criteria);
	29.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.
	29.4 If this Bidding Document allows Bidders to quote separate prices for different Lots (Contracts), and to award multiple Contracts to a single Bidder as specified in BDS, the methodology to determine the lowest evaluated price of the Contract combinations, including any discounts offered in the Letter of Bid, is specified in Section III (Evaluation and Eligibility Criteria).
	29.5 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.
	29.6 In case of e-submission bids, the Employer evaluates the bid on the basis of the

	information in the electronically submitted bid files. If the Bidder cannot substantiate or provide evidence to establish the information provided in e-submitted bid through documents/ clarifications as per ITB Clause 24.1, the bid shall not be considered for further evaluation. 29.7 In Case, a 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 from the evaluation, if public entity receives instruction from Government of Nepal.
30. Comparison of Bids	30.1 The Employer shall compare all substantially responsive bids in accordance with ITB 29.2 to determine the lowest evaluated bid.
31. Employer's Right to Accept Any Bid, and to Reject Any or All Bids	31.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to Contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.
F. Award of Contract	
32. Award Criteria	32.1 The Employer shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.
33. Letter of Intent to Award the Contract/Notification of Award	33.1 The Employer shall notify the concerned Bidder whose bid has been selected in accordance with ITB 32.1 within seven days of the selection of the bid, in writing that the Employer has intention to accept its bid and the information regarding the name, address and amount of selected bidder shall be given to all other bidders who submitted the bid.
	33.2 If no bidder submits an application pursuant to ITB 36 within a period of seven days of the notice provided under ITB 33.1, the Employer shall, accept the bid selected in accordance with ITB 32.1 and Letter of Acceptance shall be communicated to the selected bidder prior to the expiration of period of Bid validity, to furnish the performance security and sign the contract within fifteen days.
34. Performance Security	34.1 Within Fifteen (15) 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 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.
	34.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of

	the award and forfeiture of the bid security. In that event the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily. The process shall be repeated according to ITB 33.
35. Signing of Contract	35.1 The Employer and the successful Bidder shall sign the Contract Agreement within the period as stated ITB 34.1.
	35.2 At the same time, the Employer shall affix a public notice on the result of the award on its notice board and make arrangement for causing such notice to be affixed on the notice board also of the District Coordination Committee, District Administration Office, Provincial Treasury and Controller Office and District Treasury and Controller Office. The Employer may make arrangements to post the notice into its website, if it has; and if it does not have, into the website of the Public Procurement Monitoring Office, identifying the bid and lot numbers and the following information: (i) the result of evaluation of bid; (ii) date of publication of notice inviting bids; (iii) name of newspaper; (iv) reference number of notice; (v) item of procurement; (vi) name and address of bidder making contract and (vii) contract price.
	35.3 Within thirty (30) days from the date of issuance of notification pursuant to ITB 33.1 unsuccessful bidders may request in writing to the Employer for a debriefing seeking explanations on the grounds on which their bids were not selected. The Employer shall promptly respond in writing to any unsuccessful Bidder who, requests for debriefing.
	35.4 If the bidder whose bid is accepted fails to sign the contract as stated ITB 35.1, the Public Procurement Monitoring Office shall blacklist the bidder on recommendation of the Public Entity.
36. Complaint and Review	36.1 If a Bidder is dissatisfied with the Procurement proceedings or the decision made by the Employer in the intention to award the Contract, it may file an application to the Chief of the Public Entity within Seven (7) days of providing the notice under ITB 33.1 by the Public Entity, for review of the proceedings stating the factual and legal grounds.
	36.2 Late application filed after the deadline pursuant to ITB 36.1 shall not be processed.
	36.3 The chief of Public Entity shall, within five (5) days after receiving the application, give its decision with reasons, in writing pursuant to ITB 36.1: (a) whether to suspend the procurement proceeding and indicate the procedure to be adopted for further proceedings; or (b) to reject the application. The decision of the chief of Public Entity shall be final.

SECTION-II

Bid Data Sheet

A. General	
ITB 1.1	The number of the Invitation for Bids is : CONS/NCB/RCH/20/2081/82
ITB 1.1	The Employer is : Water Supply And Sanitation Division No. 4, Ramechhap
ITB 1.1	The number and identification of lots (contracts) comprising this bidding process is: : NA
ITB 2.1	The name of the Project is : Construction of intake,5 m3 tank,pump house,casing well ,Laying & jointing work of Hdpe pipe of Tutkhel Latteshwori Mahadev Pani Muhan Dekhi Budabas Water Supply Lift Project The implementing agency is : NA
ITB 4.1(a)	Maximum number of partner in a joint venture shall be : 3
ITB 4.2	Eligible countries : Nepal
ITB 4.8	Maximum number of bidding process that a Bidder, and all parties constituting the Bidder can participate shall be :5
B. Bidding Document	
ITB 7.1	For clarification purposes only, the Employer's address is: Attention: Ajay Yadav Address: Manthali, Ramechhap Ramechhap Bagmati Province Manathali Telephone: 9860305942 Facsimile number: Electronic mail address: civil.ajay12@gmail.com
ITB 7.4	A pre bid meeting shall be held. Pre-Bid meeting will take place at the following date, time and place:
	Date and Time:11-05-2025 14:00
	Address :Water Supply And Sanitation Division No. 4, Ramechhap Manthali, Ramechhap Manathali, Ramechhap Bagmati Province Nepal
ITB 7.4	A site visit shall not be organized by the Employer.
ITB 7.5	Time for request: Requests for clarification should be received by the Employer no later than 10 days prior to the deadline for submission of bids.
C. Preparation of Bids	
ITB 10.1	The language of the bid is: English / Nepali
ITB 11.1 (b)	In accordance with ITB 12 and ITB 14, the following schedules shall be submitted with the bid, including the priced Bill of Quantities for Unit Rate Contracts and Schedule of Prices for lump sum contracts: NA

ITB 11.1 (i)	The Bidder shall submit with its bid the following additional documents:	
	SL No	Document Name
	1	NA
ITB 13.6	The prices quoted by the Bidder shall not be subject to adjustment during the performance of the Contract.	
ITB 15.1	The bid validity period shall be Ninety (90) days.	
ITB 16.1	The Bidder shall furnish a bid security, from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law with a minimum of 85000.00 NPR, which shall be valid for 30 days beyond the validity period of the bid.	
ITB 16.2(b)	Bank Name:	Rastriya Banijya Bank Ltd.
	Bank Address:	Manthali, Ramechhap
	Account Name:	KHA-2-3: DHARAUTI A/C (PRA.LE.NI.KA)
	Account Number:	1680100202030000
ITB 17.1	In addition to the original of the bid, the number of copy/ies is/are: NA	
ITB 17.2	The written confirmation of authorization to sign on behalf of the Bidder shall indicate: (a) The name and description of the documentation required to demonstrate the authority of the signatory to sign the Bid such as a Power of Attorney; and (b) In the case of Bids submitted by an existing or intended JV, an undertaking signed by all parties (i) stating that all parties shall be jointly and severally liable, and (ii) nominating a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution.	

D. Submission and Opening of Bids

ITB 18.1	Bidders shall have the option of submitting their bids by electronic only.

ITB 18.1 (b)	Electronic bid submission procedure: (a) Bidders submitting Bids electronically shall follow the electronic bid submission procedures specified in this clause. i. Bidders who choose to submit their bids electronically, can view/download the bidding documents from "published bids" section of e-GP system https://bolpatra.gov.np/egp. ii. For the purpose of e-Submission, the bidder shall, at first, register in e-GP system and maintain their organization profile data and documents required during bid response preparation. The details of e-GP registration and profile management procedure are specified in Article No 9 and 10 respectively of e-GP Directives issued by PPMO, which can be downloaded from Download section of e-GP system. iii. In order to submit the bid, interested bidders shall deposit the cost of biding document in the bank and account specified in Invitation for Bid (IFB). The scanned copy (in PDF format) of the bank deposit voucher shall also be submitted along with the bid. iv. The bidders shall prepare their bids using data and documents maintained in bidder's profile, instruction provided by e-GP system and forms/format provided in the bidding document. v. Bidders may submit bids as a single entity or as a joint venture (JV). Bidder submitting bid in JV shall have to upload joint venture agreement along with partner(s) Bolpatra ID provided during bidder's registration. vi. Bidders (all partners in case of JV) shall update their profile data and documents required during preparation and submission of their bids. vii. In case of bid submission in JV, the consent of the partners shall be obtained through the confirmation link sent to the registered email address and the partners shall have to acknowledge their confirmation. viii. Bidders shall submit the required documents as specified in Section I-Instruction to Bidders, Section II-Bid Data Sheet and Section III-Evaluation and Eligibility Criteria of the bidding document. The format of the documents shall be in PDF and/or web form as provisioned in the e-GP system. ix. After providing all the details and documents, the e-GP system will generate bid response documents for the bidder. Bidders shall download, verify and confirm the bid response documents prior to bid submission. x. For verifying the authentic user, the system will send one time password (OTP) in the registered e-mail address of the bidder. System will validate the OTP and then only allow bidders to submit their bid. xi. Electronically submitted bids can be modified and/or withdrawn through the system within the bid submission deadline. xii. The bidder/bid shall meet the following requirements and conditions for e-submission of bids; aa) The e-submitted bids must be readable through PDF reader. bb) The bidders are fully responsible for using the e-GP system as per specified procedures and in no case the employer shall be held liable for bidder's inability to use the system. ac) When a bidder submits electronic bid through the e-GP System, it is assumed that the bidder has prepared the bid by studying and examining the complete set of the bidding document and e-GP instruction including the provision stipulated in e-GP Directives.
ITB 19.1	For bid submission purposes only, the Employer's address is : Attention : Water Supply And Sanitation Division No. 4, Ramechhap Manthali, Ramechhap Manathali, Ramechhap Bagmati Province Nepal Address : Water Supply And Sanitation Division No. 4, Ramechhap Manthali, Ramechhap Manathali, Ramechhap Bagmati Province Nepal The deadline for bid submission is : 25-05-2025 12:00
ITB 22.1	The bid opening shall take place at : Address : Water Supply And Sanitation Division No. 4, Ramechhap Manthali, Ramechhap Manathali, Ramechhap Bagmati Province Nepal Date : 25-05-2025 14:00

E. Evaluation and Comparison of Bids

ITB 29.4	Bidders are not permitted to quote separate prices for lots (Contracts), and a single Bidder will be awarded multiple lots (Contracts) based on provision of Paragraph 1.1, Multiple Contracts Section III (Evaluation and Qualification Criteria).
ITB 29.5	The amount of the performance security be increased by 8 percent of the quoted bid price.

SECTION - III
Evaluation and Eligibility Criteria

This Section contains all the criteria that the Employer shall use to evaluate bids and eligible Bidders. GoN/DP requires bidders to be qualified by meeting predefined eligibility criteria. In accordance with ITB 29, no other methods, criteria and factors shall be used. The Bidder shall provide all the information requested in the forms included in Section IV (Bidding Forms).

1 Evaluation

In addition to the criteria listed in ITB 29.2 (a) - (e) the following criteria shall apply:

2 Eligibility

2.1 Conflict of Interest

No conflicts of interest in accordance with ITB Sub-Clause 4.3.
Single Entity : must meet requirement
Joint Venture :
All Partners Combined : existing or intended JV must meet requirement
Each Partner : must meet requirement
One Partner : not applicable
Documents:
Submission Requirements : Letter of Bid

2.2 Government/DP Eligibility

Not having been declared ineligible by government/DP, as described in ITB Sub-Clause 4.4.
Single Entity : must meet requirement
Joint Venture :
All Partners Combined : must meet requirement
Each Partner : must meet requirement
One Partner : not applicable
Documents:
Submission Requirements : Letter of Bid

2.3 Government-owned Entity

Bidder required tomeet conditions of ITB Sub-Clause 4.5.
Single Entity : must meet requirement
Joint Venture :
All Partners Combined : existing or intended JV must meet requirement
Each Partner : must meet requirement
One Partner : not applicable
Documents:
Submission Requirements : Forms ELI - 1, ELI - 2, with attachments

2.4 UN Eligibility

Not having been declared ineligible based on a United Nationsresolution or Employer's country law, as described in ITB Sub-Clause 4.7.
Single Entity : must meet requirement
Joint Venture :
All Partners Combined : existing or intended JV must meet requirement
Each Partner : must meet requirement
One Partner : not applicable
Documents:
Submission Requirements : Letter of Bid

2.5 Bidder's Participation in Bidding Process

Bidder's Participation in not more than five (5) bidding process since 2078-12-03 i.e. March 17, 2022 as described in ITB Sub-Clause 4.8.

Single Entity : must meet requirement
Joint Venture :
All Partners Combined : existing or intended JV must meet requirement
Each Partner : must meet requirement
One Partner : not applicable
Documents:
Submission Requirements : ELI-3

2.6 Other Eligibility: Firm Registration Certificate

Single Entity : must meet requirement
Joint Venture :
All Partners Combined : not applicable
Each Partner : must meet requirement
One Partner : not applicable
Documents:
Submission Requirements : Document attachment

2.7 Other Eligibility: Business Registration Certificate (License)

Single Entity : must meet requirement
Joint Venture :
All Partners Combined : not applicable
Each Partner : must meet requirement
One Partner : not applicable
Documents:
Submission Requirements : Document attachment

2.8 Other Eligibility: VAT and PAN Registration certificate

Single Entity : must meet requirement
Joint Venture :
All Partners Combined : not applicable
Each Partner : must meet requirement
One Partner : not applicable
Documents:
Submission Requirements : Document attachment

2.9 Other Eligibility: Tax Clearance certificate

Tax clearances certificate for the F/Y 2080/81
Single Entity : must meet requirement
Joint Venture :
All Partners Combined : not applicable
Each Partner : must meet requirement
One Partner : not applicable
Documents:
Submission Requirements : Document attachment

Following contracts shall not be counted for this purpose
a) The contracts which were invited or accepted before 2078-12-03 B.S or March 17, 2022 A.D
b) The contracts which have been invited after 2078-12-03 B.S i.e March 17, 2022 A.D and accepted but the work acceptance report has been approved according to Rule 117 of PPR.
c) The contracts that are running under all types of foreign assistance

SECTION-IV

Bidding Forms

This Section contains the forms which are to be completed by the Bidder and submitted as part of its Bid.

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, including Addenda issued in accordance with Instructions to Bidders (ITB) Clause 8;

(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: [Insert one of the options below as appropriate] or when left blank is the Bid Price indicated in the Bill of Quantities

Option 1, in case of single contract: Total price is: [insert the total price of the Bid in words and figures];

Or

Option 2, in case of multiple lots (contracts): (i) Total price of each lot (contracts): [insert the total price of each lot in words and figures]; (ii) Total price of subject contract [say Lot1] and Lot2 [another contract] [insert the total price in words and figures]; (iii) Total price of subject contract [say Lot1]and Lot3 [another contract] [insert the total price in words and figures]; Total price of subject contract [say Lot1], Lot2 [another contract], Lot3 [another contract], ……..[insert the total price in words and figures];

(d) The discounts offered and the methodology for their application for subject contract [single contract] are:…….. [For Bidding Documents not provisioning multiple contracts]

Add following if Bidding Document provisions applicability of multiple contracts

The discounts offered and the methodology for their application for subject contract [say Lot1] and Lot2 [another contract] are:……..

The discounts offered and the methodology for their application for subject contract [say Lot1] and Lot3 [another contract] are:……..

The discounts offered and the methodology for their application for subject contract [say Lot1], Lot2 [another contract] and Lot3 [another contract],……,
are:……..

[Note:

1. Formulate possible combinations depending upon the number of lots under Bidding Process and modify accordingly Paragraph (c) and (d)]

(e) Our bid shall be valid for a period of ……..***[insert validity period as specified in ITB 15.1]*** 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) Our firm, including any subcontractors or suppliers for any part of the Contract, have nationalities from eligible countries or any countries [insert the nationality of the Bidder, including that of all parties that comprise the Bidder if the Bidder is a consortium or association, and the nationality of each Subcontractor and Supplier];

(h) We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 4.3;

(i) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB 4.3;

(j) Our firm, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, has not been declared ineligible, under the Employer's country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council;

(k) We are not a government owned entity/We are a government owned entity but meet the requirements of ITB 4.5;[1]

(l) 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;

(m) We declare that, we have not been black listed as per ITB 3.4 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.

(n) We declare that we have not running contracts more than five (5)[1] in accordance with ITB 4.8.

(o) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive; and

(p) If awarded the contract, the person named below shall act as Contractor's Representative:

(q) 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 ……....

[1] Note: Following contracts shall not be counted for this purpose

a) The contracts which were invited or accepted before 2078-12-03 B.S or March 17, 2022 A.D

b) The contracts which have been invited after 2078-12-03 B.S i.e March 17, 2022 A.D and accepted but the work acceptance report has been approved according to Rule 117 of PPR.

c) The contracts that are running under all types of foreign assistance

1 Use one of the two options as appropriate.

Table of Price Adjustment Data[2]

[To be used if Price Adjustment is applicableas per GCC 53.1]

Code	Index Description	Source of Index*	Base Value and Date	Employer's Proposed Weighting Range (coefficient)	Bidder's Proposed Weighting (coefficient)**
1	**2**	**3**	**4**	**5**	**6**
	Non - adjustable (A)			0.15	0.15
	Labor (b)				
	Materials (c)				
	Equipment usage (d)				
		Total			**1.00**

*Normally following source of index shall apply. Public Entity shall choose applicable Index for each item.

(a) Labor: "National Salary and Wage Rate Index"- "Construction Labor" of Nepal Rastra Bank
or
rate fixed by District Rate Fixation Committee

(b) Material:"National Wholesale Price Index" - Construction Materials" of Nepal Rastra Bank

(c) Equipment usage:

"National Wholesale Price Index"-"Machinery and Equipment" of Nepal Rastra Bank

or

"Fuel" Price fixed by Nepal Oil Corporation.

** Bidders proposed weightings should be within the range specified by the Employer in column - 5

[2] Non-compliance of the data (stipulated by the bidder in this table) with requirements described here shall not be grounds for bid rejection and such non-compliance will be subject to clarification and rectification prior to contract award.

Table of Price Adjustment Data[3]

[To be used if Price Adjustment is applicable as per GCC 53.6]

Code	Construction Material*	Unit	Base Price (NRs/Unit) (Ex-factory)	Source (Factory)**
1	2	3	4	5

* Major construction materials to be specified by Employer in column - 2.

** Base Price and source normally to be specified by Employer (or alternatively informed to be proposed by bidder) in column 4 and5.

Note:
The base prices of the construction materials shall be taken as of 30 days before the deadline for submission of the Bid as quoted by the Bidder and verified by the Employer. For the purpose of calculation of price adjustment, the Ex-factory price of the same source shall be taken into consideration.

[3] Non-compliance of the data (stipulated by the bidder in this table) with requirements described here shall not be grounds for bid rejection and such non-compliance will be subject to clarification and rectification prior to contract award.

Bid Security

Bank Guarantee

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

(On letterhead paper of the Bank)

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 Bids No. …… ("the IFB").

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) has withdrawn or modifies its Bid:

(i) during the period of bid validity specified by the Bidder on the Letter Bid, in case of electronic submission

(ii) from the period twenty-four hours prior to bid submission deadline up to the period of bid validity specified by the Bidder on the Letter of Bid, in case of hard copy submission; or

(b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or

(c) 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.

(d) 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).

Bidder's Information Format

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Others

Bidder’s Information

Form ELI - 1: Bidder’s Information Sheet

Bidder's Information	
Bidder's legal name	
In case of JV, legal name of each partner	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	
Attached are copies of the following original documents.	
1. In case of single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2. 2. Authorization to represent the firm or JV named in above, in accordance with ITB 17.2. 3. In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1. 4. In case of a government-owned entity, any additional documents not covered under 1 above required to comply with ITB 4.5.	

Form ELI - 2: JV Information Sheet

Each member of a JV must fill in this form

JV / Specialist Subcontractor Information	
Bidder's legal name	
JV Partner's or Subcontractor's legal name	
JV Partner's or Subcontractor's country of constitution	
JV Partner's or Subcontractor's year of constitution	
JV Partner's or Subcontractor's legal address in country of constitution	
JV Partner's or Subcontractor's authorized representative information (name, address, telephone numbers, fax numbers, e-mail address)	
Attached are copies of the following original documents.	
1. articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2. 2. Authorization to represent the firm named above, in accordance with ITB .2. 3. In the case of government-owned entity, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5.	

Form ELI - 3: Bidder's Running Contracts****

Each member of a JV must fill in this form

	Bidder's Running Contracts				
Name of office	**Contract Identification no.**	**Source of Fund***	**Date of issuance of Letter of Acceptance**	**Status of contract****	**Date of Issuance of Taking Over Certificate*****

* Mention GON funded or DP funded or Other PE (Insert name) funded

** Mention "Yet to sign" if contract is not signed, "Running" if contract has been signed and contract is running and "Substantially completed" if taking over certificate has been issued.

*** Insert date of issuance of taking over certificate if the awarded contract has been substantially completed and taking over certificate has been issued.

****Note: Following contracts shall not be counted for this purpose

a) The contracts which were invited or accepted before 2078-12-03 B.S or March 17, 2022 A.D

b) The contracts which have been invited after 2078-12-03 B.S i.e March 17, 2022 A.D and accepted but the work acceptance report has been approved according to Rule 117 of PPR.

c) The contracts that are running under all types of foreign assistance

Price Adjustment : Table A - Local Currency

Sl No.	Index Description	Source of Index	Base Value	Base Date	Employer's Proposed Weighting coefficient Range from	Employer's Proposed Weighting coefficient Range to	Bidder's Proposed Weight
						Total	1

Part - II

REQUIREMENTS

Table of Clauses

SECTION-V

Works Requirements

This Section contains the Specification, the Drawings, and supplementary information that describe the Works to be procured.

VOLUME X

GENERAL SPECIFICATIONS
FOR
SUPPLY OF PIPES & FITTINGS AND
CONSTRUCTION WORKS

PREFACE

This document "General Specification" presents specifications for High Density Polyethylene Pipes & Fittings, GI pipes & fittings and valves, and General Specification for construction work. This is the tenth in a series of twelve Technical Documents Which are :

Volume I	:	Procedural Guidelines
Volume II	:	Design Criteria
Volume III	:	Standard Drawings
Volume IV	:	Rate Analysis Norms
Volume V		:Quantity Estimate with Schedule of Materials & Labour for Standard Components
Volume VI	:	Water Quality and Simple Treatment Units
Volume VII	:	Formats for Project Documentation
Volume VIII	:	Operation and Maintenance Manual : Policy & Procedures
Volume IX	:	Operation and Maintenance Manual : Reference Manual
Volume X	:	General Specifications
Volume XI	:	Guidelines for Tubewell Program (a) Community Based Shallow Tubewell (b) Pumps
Volume XII	:	Pipe Fittings Requirements and Details

DEPARTMENT OF WATER SUPPLY AND SEWERAGE
GENERAL SPECIFICATIONS FOR
RURAL WATER SUPPLY SCHEMES

CONTENTS

SPECIFICATION FOR HDP PIPES & FITTINGS

CONTENTS

SPECIFICATION FOR HDP PIPES & FITTINGS

1.0 GENERAL

1.1 Definition

For the purpose of this specification, the following words and expression shall have the meanings hereby assigned to them, except where the context otherwise requires:

(a) "Purchaser" means the Water Supply and Sanitation Division/Subdivision Office (WSSDO)/Regional Directorate of Department of Water Supply and Sewerage, Ministry of Physical Planning & Works, His Majesty's Government of Nepal.
(b) "Manufacturer" means the firm or company who has been legitimately registered with the appropriate government agency to manufacture the pipes and fittings and includes his personal representative.
(c) "Supplier" means the person or persons, firm or company including manufacturer, whose tender has been accepted by the purchaser and has agreed to supply the pipes and fittings as per the specifications provided hereunder.
(d) "Contact" means the Condition of Contract, Specifications, Drawings, Priced Bill of Quantities, Tender and Agreement together with any Appendices and Addenda thereto.

1.2 Extent of Contract

The work under the Contract shall comprise the manufacture and delivery to sites as specified in the Bills of Quantities of pipes required for rural water supply projects.

1.3 Experience of Manufacturer

The supplier must show at the time of tendering that the Manufacture whose product he intends to supply have proven experience and capacity in the manufacture of the type of Goods to be supplied under this contract.

1.4 Deviation from Specifications

All pipes and fittings shall comply with Specification specified except that, if the Supplier has offered pipes which while meeting the general requirements of the specification deviate there form in some point or points of detail and has at the time of submitting his Tender submitted full details of these deviations and Purchaser has accepted these deviations in writing, then the said Goods shall deviate from the Specification only to the extent so approved. Where National Standards are cited in these documents with which the Goods must comply, Goods meeting other internationally accepted standards, which ensure a quality equal to or higher than the standards mentioned will also be accepted.

2.0 MATERIALS AND WORKMANSHIP

2.1 General Requirements

2.1.1 Materials

Term "materials" shall mean all materials and articles of every kind whether raw, processed or manufactured which are used in manufacture of the Goods to be supplied under the Contract.

2.1.2 Composition

The pipes shall be extruded from HOSTALIN GM 5010 T.2/Marlex or equivalent approved compound consisting of virgin polythene in which carbon black and a suitable non-toxic anti-oxidant are evenly dispersed.

All materials shall be new and of the kinds and qualities described in the clauses hereof appropriate to the particular item and shall be at least equal to approved samples except that alternative materials may be accepted provided the Supplier has at the time of tendering:

a) drawn particular attention to the deviation from the Specification in his tender and provided particulars of the alternative material offered at the time of tendering; and
b) substantiated to the satisfaction of the Purchaser that the material offered is equal or superior to the material specified for the use to which it in to be put and has obtained from the Purchaser approval in writing to its use.

Where materials to be used for any component have not been laid down in the Specification, the manufacturer shall use only those materials in such compositions as have been proven in actual service to be the most suitable for the particular purpose. All pipes shall be smooth, clean and free from all defects.

The supplier must name the manufacturer(s) at the time of tendering from whom he proposes to obtain any material under the contract. As a proof, he should also include a Letter of Consent from the manufacturer(s) stating his acceptance to sell the material to the supplier on award of the contract. Normally, the material supplied should be the product from the quoted manufacturer(s). However, in situation beyond the control of the supplier, the Purchaser may consent to accept material from other manufacturer; provided he is satisfied, that the new experienced and capable to produce the material and that the product is either equivalent or superior to the product from the previously agreed manufacture. No orders shall be placed with the newly named manufacturer without the written consent of the Purchaser.

2.1.3 Samples of Materials and Tests on Samples

The Supplier shall provide to the Purchaser three certified copies of the results of any routine analyses or tests carried out by him or his manufacturer on materials used in the manufacture of the Goods when and if asked by the Purchaser.

In addition, when and if required by the Purchaser, the Supplier shall provide samples of all or any materials used in the manufacture of the Goods and shall carry out any specified test on the said materials as may be required the Purchaser at the place of manufacture or at a laboratory approved by the Purchaser and shall provide to the Purchaser within seven days of each such test three certified copies of the results of the analysis or test.

Samples shall be submitted and tests carried out sufficiently early to enable further samples to be submitted and tested if required by the Purchaser. The Supplier or his manufacturer shall prepare the necessary test pieces and supply all labor, appliances, testing apparatus and everything necessary for carrying out all specified tests.

The Supplier shall give the Purchaser 14 days notice in writing of the date on which any of the samples will be ready for testing or inspection and unless the Purchaser shall attend at the appointed place within the said 14 days, the test may proceed in his absence.

Approval by the Purchaser as to the placing of orders for materials or as to samples or tests shall not prejudice any of the Purchaser's rights under the Contract.

2.1.4 Test Certificates

Test certificates in triplicate shall be provided by the Supplier for each consignment of pipe supplied, giving the process of manufacture and the results of the specified tests.

Similar certificates in triplicate shall be provided by the Supplier in respect of materials to be used in the manufacture of the pipes giving the process of manufacture, chemical analysis (where relevant) and the results of the specified tests. The material shall be suitably marked to enable it to be identified from references on the certificates.

Any materials subject to test incorporated in the manufacture of the pipes and fittings before the Purchaser has received a satisfactory Test Certificate shall be at the Supplier's risk.

2.1.5 Independent Tests

The purchaser reserves the right to carry out any independent tests he may deem fit on the completed pipes or on any material to be used in the Contract at any stage of

manufacture or delivery, in addition to those tests specified to be made by the manufacturer.

Any samples of materials, which may be required for such tests shall be provided by the Supplier at no extra cost to the Purchaser.

The cost of making any such independent tests shall be borne by the Purchaser, unless it is shown that the workmanship or materials under test are not in accordance with the Specification, in which case the cost of the tests shall be borne by the Supplier.

Any materials, workmanship or completed pipes, which are shown by such independent tests not to be in accordance with the Specification, shall be rejected, notwithstanding any previous certificate which may have been provided.

2.1.6 Rejected Goods

Any Goods delivered to the Site which been rejected by the Purchaser shall immediately be removed from the Site by, and at the expense of, the Supplier. Replacement or rejected Goods shall be made as soon as possible but in no case exceeding forty- five (45) days from the time of rejection.

Any pipes, which have been rejected, shall be marked in a distinctive manner, which shall preclude any possibility of their use for the purpose for which they were supplied. Such pipes may be submitted for retest following the correction of any defects, where such correction is permitted by the Purchaser.

2.1.7 Standards

All materials, workmanship and components shall, where applicable and unless otherwise stated in the Contract, comply with either:

(a) a relevant Nepal, Indian, British or American Standard current on the date fixed for receipt of tenders, or

(b) any other internationally accepted equivalent standards which, in the opinion of the Purchaser, are equal or better than the specified standards.

Nepal Standard NS : 40 - 2042 published by Nepal Bureau of Standards and Metrology :
Indian Standards IS : 4984 - 1995 published by Bureau of Indian Standards,0 Manak Bhawan, New Delhi, India;
British Standards BS 3284 : 1976 published by British Standards Institution (BS), British Standards House, London WI, England.

The acceptance of a tender based upon a Standard or Code of Practice proposed by the Supplier shall only signify the Purchaser's general approval to the use of such Standard or Code of Practice and shall not signify acceptance by the Purchaser of any

materials or workmanship subsequently found to be inferior to that specified in the corresponding Standard or Code of Practice.

2.1.8 Supply and Marking of Pipes

The Pipes shall be supplied either as coils with a minimum inner diameter of 25 times the OD of the pipes (except 2,2.5, and 4 kg/Sq.cm. pressure ratings), as given below or in lengths of five meters. The pipes may also be supplied in other lengths where so agreed between the Supplier and the Purchaser. The ends shall be cut at right angles to the pipe axis and shall be plugged or covered.

Table No 1 HDPE Pipes conforming to NS 40/2042

Pipe Size, mm	Pressure Rating, kg/cm2	Series	Supply length, m	Inner Coil diameter, m
16	10	V	300	0.50
20	10	V	300	0.50
25	10	V	200	0.70
32	6	IV	200	0.80
32	10	V	100	0.80
40	4	III	5*	
40	6	IV	100	1.00
40	10	V	100	1.00
50	4	III	5*	
50	6	IV	100	1.25
50	10	V	50	1.25
63	4	III	5*	
63	6	IV	50	1.50
63	10	V	25	1.50
All pipes above 63 mm dia, shall be supplied in 5 m length.				
* These pipes should be supp71lied in coils as per the order of the client.				

A continuous line between 2mm to 5mm wide must be indelibly and clearly marked along the pipe surface according to the following code:

- 2.5 kg/cm^2 working pressure - red line
- 4.0 kg/cm^2 working pressure - blue line
- 6.0 kg/cm^2 working pressure - Green line
- 10.0 kg/cm^2 working pressure - Yellow line

Each pipe shall also have the following information marked on it:

Item number; pipe size - outer diameter; Series in Kgf/cm^2 ; Weight; Length; NS,IS, BS, etc, or relevant authoritative Standards mark.

The method of marking shall be such as to ensure that all of the information will remain legible after shipping, local haulage and storage in the open.

2.1.9 Drawings

Before manufacture is commenced, the Supplier shall submit to the Purchaser for approval six copies of drawings of all pipes to be supplied, which do not comply with relevant accepted Standards, showing all dimensions in metric units. The Supplier shall supply the Purchaser without charge two copies of all drawings subsequently approved.

2.2. Testing of Pipes Before Shipment

2.2.1 Tests

At the place of manufacture; hydraulic tests, reversion tests and internal pressure creep tests shall be carried out on ten random samples from each pipe series and diameter spaced throughout the manufacturing period.

The requirement may be reduced where a small length of a particular pipe diameter and series is to be supplied.

The working pressures for the various pipe series shall be:

Series II 2.5 kgf/cm^2, Series III 4 kgf/cm^2,
Series IV 6 kgf/cm^2, Series V 10 kgf/cm^2

Tests shall be witnessed by an independent inspection agent/ or purchaser's agent, to be appointed by the Purchaser, who shall approve the tests on behalf of the Purchaser.

2.2.2 Site Inspection and Testing

All Goods will be inspected after delivery to site and the Purchaser will reject any item which is damaged or not complying with the specifications.

3.0 HDP FITTINGS

All HDP fittings shall be manufactured by Injection Molding Process in accordance with IS : 8008 (Part I _ VII) - 1976 or equivalent to join HDP pipes to IS : 4984 - 1995 or equivalent. All fittings shall be molded 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 10 kg/cm^2. Fittings supplied must have a clear marking indicating the relevant pipe size(s) indelibly on each items.

Section - II
Specification for Galvanized Mild Steel (GMS) Pipes & Fittings and Valves

SPECIFICATION FOR GALVINAZED MILD STEEL (GMS) PIPES & FITTINGS AND VALVES

CONTENTS

5.0 FLEXIBLE/DETACHABLE COUPLINGS

6.0 FLOAT VALVE

7.0 NIPPLES

8.0 BRASS UNION

9.0 FLANGE SET

10.0 GI FLANGE

11.0 GI VALVE BOX

12.0 GI VALVE KEY

13.0 M.S. MANHOLE COVER AND FRAME

14.0 WATER METER

SPECIFICATION FOR GMS PIPES, FITTINGS AND VALVES

1.0 GENERAL REQUREMENTS

1.1 Definition

For the purpose of this specification, the following words and expression shall have the meanings hereby assigned to them, except where the context otherwise requires:

(a) "Purchaser" means the Water Supply and Sanitation Division/Subdivision Office (WSSDO) of Department of Water Supply and Sewerage, Ministry of Physical Planning & Works, His Majesty's Government of Nepal.
(b) "Manufacturer" means the firm or company who has been legitimately registered with the appropriate government agency to manufacture the pipes and fittings and includes his personal representative.
(c) "Supplier" means the person or persons, firm or company including manufacturer, whose tender has been accepted by the purchaser and has agreed to supply the pipes and fittings as per the specifications provided hereunder.
(d) "Contact" means the Condition of Contract, Specifications, Drawings, Priced Bill of Quantities, Tender and Agreement together with any Appendices and Addenda thereto.

1.2 Materials

The term materials shall mean all materials and articles of every kind, raw, processed or manufactured, which are used in manufacture of the Goods to be supplied under the Contract.

All materials shall be new and of the kinds and qualities described in the clauses hereof appropriate to the particular item and shall be at least equal to approved samples except that alternative materials may be accepted provided the Supplier has at the time of tendering:

a) Drawn particular attention to the deviation from the Specification in his tender and provided particulars of the alternative material offered at the time of tendering; and
b) Substantiated to the satisfaction of the Purchaser, that the material offered is equal or superior to the material specified for the use to which it is to be put and has obtained from the Purchaser approval in writing to its use. Where materials to be used for any component have not been laid down in the Specification, the manufacturer shall use only those materials in such compositions as have been proven in actual service to be the most suitable for the particular purpose.

1.3 Standards

All materials, workmanship and components shall, where applicable and unless otherwise stated in the Contract, comply with either:

(a) with the relevant ISO, Nepal, Indian or British Standard current or Code of practice current on the date fixed for receipt of tenders, or

(b) with other internationally accepted equivalent Standards or Codes of Practice which are equal or superior than the specifications.

Nepal Standard NS : 199 - 2046 published by Nepal Bureau of Standards and Metrology : or

Indian Standards IS : 1239 (Part I) - 1990 published by Bureau of Indian Standards, Manak Bhawan, New Delhi, India, or

British Standards BS 1387 : 1967 published by British Standards Institution (BS), British Standards House, London, England.

The acceptance of a tender based upon a Standard or Code proposed by the Supplier shall only signify the Purchaser's general approval to the use of such Standard or Codes and shall not make the Purchaser liable to accept a Standard or Code subsequently found to be inferior to that specified in the corresponding Standard or Code of Practice.

1.4 Test Certificates

Certificates in triplicate shall be provided by the Supplier for each valve, pipe and fittings supplied giving the process of manufacture and the results of the specified tests.

Similar certificates in triplicate shall be provided by the Supplier in respect of materials to be used in the manufacture of the valves, pipes and fittings giving the process of manufacture, chemical analysis (where relevant) and the results of the specified tests.

The material shall be suitably marked to enable them to be identified from references on the certificates.

1.5 Independent Tests

The purchaser reserves the right to carry out any independent or local tests he may deem fit on the completed pipes and fittings or on any material provided under the Contract at any stage during the Contract including the guarantee period. In addition to any relevant clause in the General Conditions of Contract of Contract any materials, workmanship or completed pipes and fittings which are shown by such

independent tests not to be in accordance with the Specification shall be rejected notwithstanding any previous certificate which may have been provided

2.1.6 Rejected Goods

Any materials delivered to Site, which are rejected by the Purchaser shall immediately be removed from the Site by, and at the expense of, the Supplier.

Any pipes and fittings, which have been rejected, shall be marked in a distinctive manner, which shall preclude any possibility of their use for the purpose for which they were supplied. Such pipes and fittings may be submitted for re-test following the correction of any defects, where such correction is permitted by the Purchaser.

2.0 GALVANIZED MILD STEEL, PIPES AND FITTINGS

2.1 Manufacture and Testing

Tube shall be made from tested quality steel manufactured by any approved process.

The manufacture and testing of all galvanized steel pipes and fittings shall comply with the current edition of NS, IS, BS or equivalent. Galvanized steel pipe shall be of the class specified in the Bills of Quantities.

Ends of pipes shall generally be screwed at both ends as per IS 554- 1975, BS 21 threads or equivalent or as requested by the purchaser. Ends of pipe specials and fittings shall be screw socketed suitable for screwing to IS : 554 - 1975 or BS : 27 threads or equivalent pipe threads. Where flanged pipe work is specified this shall be suitable for jointing with other flanged pipe work and valves.

2.2 Process of Manufacture

"Medium" and "Heavy" duty galvanized steel pipes and sockets shall be either welded or seamless as agreed to between the purchaser and the manufacturer.

2.3 Standard and Non Standard Lengths

The pipe shall be supplied in standard lengths of 6 meters each. Each pipe shall be provided with a corresponding size of one socket at one end and a plastic ring (cover) at the other end for protection of the threads of the pipes.

Non standard lengths shall be approximately 3 meters in length or as required by the purchaser. One socket to be provided with each pipe at one end and a plastic ring on the other end as mentioned above.

In both the cases, the local lengths for each class and diameter shall be the sum of the pipe lengths measured excluding the sockets.

2.4 Pipe Dimensions and Tolerances

The pipe wall thickness and outside diameter of the pipes shall comply with Section 2.4 of BS 1378 or equivalent.

The dimensions, weights and working pressures of Screwed and Socketed Galvanized Mild Steel Tubes are presented in Annex A

2.5 Hydraulic Tests

Each pipe and fittings shall be tested at the place of manufacture to a hydraulic test pressure or 50 bar (MPa) without showing defects of any kinds, the pressure being maintained sufficiently long (in any case not less than three minutes) for proof and inspection.

2.6 Galvanizing

After hydraulic testing of each item has been completed, pipes, fittings and flanges shall be thoroughly rescaled, washed as required and then dipped in a bath of molten zinc, containing not less than 98.5% by weight of zinc at a temperature suitable to produce a complete and uniformly adherent coating of zinc. Where tubes are required to be galvanized, the zinc coating on the tubes shall be in accordance with IS : 4736 - 1986 or equivalent. Pipes and fittings, which are to be screwed shall be screwed after galvanizing has been completed.

2.7 Tests on Finished Pipes

The supplier shall arrange and carry out tests on the galvanizing in accordance with Appendix A of BS 1387 or equivalent. One pipe per batch of 500 pipes shall be sampled for this test.

The supplier shall also arrange and carry out bending and flattening tests on pipes above 50 mm nominal diameter in accordance with section 2.9 of BS 1387 or Section 14 of IS : 1239 (Part I) - 1990. Two pipes per batch of 500 pipes shall be subjected to these tests.

2.8 Pipe Specials and Fittings

Galvanized mild steel pipe specials and fittings shall conform to the appropriate dimensions given either in BS 1387 or BS 1740 or IS : 1879 - 1987 or equivalent. The material used for the manufacture of malleable cast iron fittings shall conforms any of the grade specified in IS : 2107 - 1977 of IS : 2108 - 1977 or equivalent. Outlets of fittings shall be threaded to dimensions and the tolerances as specified in IS : 554 - 1985 or equivalent. Fittings shall be galvanized to meet the requirements of IS : 4736 - 1986 or equivalent. Pressure test shall e as per section 13 of IS : 1879 - 1987 or

equivalent. The dimension and weight of all fittings shall be as per the corresponding section of standards e.g. IS : 1879 - 1987 or equivalent. The ends of all pipe specials shall generally be screw socketed. If the supplier offers screw spigot ended pipe specials, a matching screw socket shall be provided for each end of the pipe specials. All standard lengths shall be supplied with one coupling and the price quoted shall include for this. The fitting shall meet an internal hydraulic pressure of not less than 2.1 MPa or an internal pressure of 1.05 MPa while the fitting is completely immersed in water or light oil.

2.9 Flanged Joints

Flanges shall be the boss screwed type in accordance with BS 4505 Table 16/4 or equivalent suitable for screwing to BS : 21 pipe threads or equivalent. Each flange shall be supplied with one set of jointing materials.

Each set of flange jointing materials shall be supplied complete with nuts, bolts, washers and joint rings with an additional 10% as spares. Body bolts and nuts shall be galvanized, joint rings shall be flat section 3 mm thick, medium rubber reinforced with two-ply flax fabric and complying with BS 5292 or equivalent and shall not extend beyond the bolt circle. Bolts and nuts shall be hexagonal and shall be in accordance with BS 4190 or equivalent.

2.10 Markings

Each standard length Medium Class galvanized pipe shall be marked with two blue bands 0 mm wide (one band at each end of the pipe) the nominal diameter, the length of pipe and the relevant manufacturing standard. Similarly for light class pipes except that the band colour shall be brown or yellow and that for heavy class red color bands.

2.11 Protection Against Damage in Transit

Pipes and specials shall be protected with a suitable varnish through out their entire length. Straight pipes shall be bundled together into convenient lots (for transport) by rope or 105 WG wire or other suitable material in at least three places. Sockets and other small fittings shall be packed in strong wooden boxes.

The threads of all pipes shall be effectively covered with a good quality grease or other suitable compound and each pipe above 50mm diameter shall have a protecting ring affixed to the screwed spigot end. Rates should include for all packaging.

3.0 VALVES, STOP COCKS AND FERRULES

3.1 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 casting 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 Purchaser shall have the power to reject it and the Supplier shall replace it at no extra expenses to the Purchaser.

3.2 Interchangeable Components

All similar equipment shall be strictly interchangeable as a whole and as regards their component parts.

3.3 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 surface 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 Purchaser. 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 expenses to the Purchaser. 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.

3.4 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 :

a) Seat Tests

(i) 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 atomospheric pressure. There shall be no visible leakage past the wedge at the hydrostatic test pressure (gauge) specified;

(ii) 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 :

Add Table II-10

All valves shall be marked with cast-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.

3.5 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 set.

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 MPa (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 discoloration 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 in flexible seal.

3.6 Flanges

Flanges for pipe work connections shall in all respect be in accordance with BS 4504 PN 16 or equivalent unless otherwise specified.

3.7 Sluice Valves

Sluice Valves shall conform generally to BS 5163/IS 14846/2000 or equivalent and shall but the inside non-rising screw wedge-gate type suitable for waterworks purposes.

The valve gates shall be double-faced cast iron made in one piece. The wedge seats (ring faces) and corresponding body seats shall be gunmetal, machined and having broad bearing surfaces securely fixed to machine recessed. The recesses for the spindle nuts shall be smooth and even so that on opening or closing the valve stresses are evenly distributed over the bearing areas.

The gate guides shall be cast integrally with the valve bodies.

The spindles shall be high tensile bronze, non-rising type and shall have machined square or acme threads. The spindles shall be truly circular throughout their lengths and be of such lengths that when the valves are closed the bottom ends of the spindles engage fully in the spindle nuts. The spindle collars or thrust plates shall be concentric and machined, suitable for the specified test pressure.

The spindle nuts shall be gunmetal and square or acme threaded to suit the spindles. The thickness and bearing areas of the shoulders of the nuts shall be adequate to resist operating thrusts.

Sluice valves shall be operated by tee key and shall be provided with a square iron cap. The rate shall include for provision of one tee key one meter long with each sluice valve.

Opening/closing indicators shall be provided and mounted on all valves of 200 mm diameter and above.

3.8 Bib Cocks

Bib cocks shall be of brass and shall be nominal 15 mm diameter con-forming to BS 1010 or IS : 781 - 1984 or equivalent. Inlets shall be male screwed suitable for jointing to 15 mm GI socket. Outlet shall be plain ended. Top shall be round turned crutch. The weight of 15 mm dia bib tap and stop tap shall be 0.40 kg.

3.9 Globe Valves

Glove Valves shall be gunmetal, rising stem, handwheel operated with screwed female ends; conforming to IS : 778 - 1984 Class I or equivalent

3.10 Gate Valves

Stop valves shall be gunmetal wedge gate valves, rising stem, hand-wheel operated with screwed female ends; conforming to IS : 778 - 1984 Class I or equivalent.

3.11 Ferrule Cocks

Ferrule cocks shall be of gunmetal square head of 15 mm internal diameter swivel balancing screw down ferrules with make inlet and single make outlet; conforming to IS : 10942-2000 or equivalent.

3.12 Air Valves

Single orifice air valve 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 make screwed 15 mm diameter suitable for connection to a GMS riser pipe. Maximum operating pressure will be 100 meters head of water.

3.13 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 incorporated 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.

4.0 UNIONS

4.1 General

Unions shall either be brass or galvanized malleable iron, as specified in bill of quantities, manufactured in accordance with a recognized international standard. The manufacturer shall produce full details concerning the standards to which his goods are produced. All unions shall be suitable for joining GMS pipes manufactures to BS 1387 or IS : 1239(part I) - 1990 or equivalent with threads to BS 21 or equivalent.

4.2 Packing

Packing shall be as for valves.

5.0 FLEXIBLE/DETACHABLE COUPLINGS

Flexible/detachable joints are required for repairs to existing GMS pipes of medium class manufactured to BS 1387 or equivalent specification. They shall be similar to "Viking Johnson Couplings" without central register and shall be capable of withstanding a pressure of 250m head of water. They shall be supplied complete with all bolts and gaskets and shall be suitably protected against corrosion by an approved coating. Sizes required in the range of pipe sizes ND50 to ND100. Full details to be supplied for approval before manufacture.

6.0 FLOAT VALVE

Float valve shall be of heavy duty type for break pressure chamber and conforming to standard IS : 1703 - 1977 (horizontal plunger type or equivalent. The pressure rating shall be 14 Kg/cm^2 and male thread shall be as per corresponding standard.

7.0 NIPPLES

Nipple of various length as required by the Purchaser shall be manufactured of Medium/Heavy duty galvanized mild steel pipes conforming to IS : 1239 (part I) - 1990 or equivalent. Threads to conform with IS : 554 - 1975 or equivalent. The standard lengths are :

100 mm upto 25mm nominal bore
150 mm for 32 mm & 65 mm nominal bore
200 mm for 80 mm & 100 mm nominal bore

8.0 BRASS UNION

Brass union shall be used to join HDP pipe and equivalent G.I. Pipe. Dimensions for HDP pipes are as per : 4984 - 1995 equivalent and GI pipes as per IS : 1239 (part I) - 1990 or BS : 1387 - 1967 make threads or equivalent. Type of joint : Expansion joint consisting of :

a. union body
b. brass ring
c. brass expansion plunge (for insertion into to HDP pipe)
d. neoprene ring for insertion into union body &
e. flat rubber coaster. Each set to be supplied assembled.

9.0 FLABGE SET (for HDP - GI Jointing)

Flange set to join HDP pipe as per IS : 4984 - 1995 or equivalent to IS : 1239 (part I) - 1990 or BS : 1387 GI pipe (make threads) shall consist of :

a. female threaded flange
b. plain unthreaded flange
c. HDP flange adaptor
d. heavy duty rubber gasket and
e. nuts, bolts and washer (adequately lightened)

10. GI FLANGE

Flanges shall be female threaded to join GI pipe and valves etc and shall be drilled in accordance with BS : 4504 PN 16 or equivalent. The supply shall be complete with nuts, bolts and washers, all adequately tightened.

11. GI VALVE BOX

GI Pipe Boxes shall be manufactured according to sample made available or the Drawing and GI pipe used must be medium duty conforming to NS : 199 - 2046 or IS : 1239 (part) - 1990 or equivalent. As shown in the drawing one end of the GI pipe

shall be fitted with end cap or one set of GI flange and GI blank flange complete with nuts and bolts. The bottom of the GI pipe shall be slotted to allow it to slip over the pipeline and locked into place with 300 mm long M.S. bar by passing through two 10 mm holes drilled near the base.

12. GI 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.

13. M.S. MANHOLE COVER AND FRAME

Manhole cover and frame shall be manufactured as per drawing or samples made available to the manufacturer.

Manhole Frame to be manufactured from 6 mm thick rolled steel 50 mm wide, 8 mm mild steel bar 100 cm long to be welded to the outside of the frame at 90 degree intervals. Lugs (2 nos) to be made as L sections 100 mm high, 50 mm wide to be manufactured from 5 mm thick rolled steel. Slot 15 mm x 25 mm to be drilled in each lug 10 mm from top of lugs. Bottom end of L section shall be welded at 90 degree to the middle of the outside of the frame.

Cover Frame to be manufactured from 5mm thick rolled steel 50mm wide. Framed to be circular 580mm outside diameter, 8mm mild steel bars 6 nos to be welded to the inside of the frame to form a regular square reinforcement mesh. Handles 2 nos. to be made from 10mm plain steel bar 100mm wide 50mm height to be welded to outside o frame. Lugs 2 nos. to be made from 5 mm thick rolled steel 50 mm wide 100 mm high with slot 15 mm x 25 mm drilled in each lug 10mm from top of each lug. Lugs to be welded flush to the outside of frame with bottom of lug in line with bottom of frame.

Manhole frame and Cover frame shall be painted with two coats of red oxide metal primer.

14. WATER METER

Water meters are generally used for measuring flows in the mains and house service connection. Domestic water meters are to be as per IS 779-1994 or NS 428-2058 or equivalent. Generally two types of meters semi positive and inferential are available in the market. Inferential water meter has the same accuracy as the semi positive type at higher flows; it passes unfiltered water better than a semi positive meter and is lower in cost. Over all dimensions and nominal capacities of water meters are presented in Table No…3……..

Table No. 3 Dimensions and Capacities of Water Meters

Nominal Size, mm	Over all length including nipple, mm	Over all Width maximum, mm	Over all height maximum, mm	Discharge, lph	
				Semi positive type	Inferential type
15	250	130	180	2000	2500
20	290	130	180	3400	3500
25	380	140	200	5500	5500
40	430	230	250	10000	16000
50	470	250	300	15000	23000

Section - III
General Specification for Construction Works

DEPARTMENT OF WATER SUPPLY & SEWERAGE
GENERAL SPECIFICATIONS
FOR
CONSTRUCTION WORK
FOR COMMUNITY-BASED PROJECTS

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DEPARTMENT OF WATER SUPPLY & SEWERAGE
GENERAL SPECIFICATIONS
FOR
CONSTRUCTION WORK

GENERAL

The organization of construction works in a community-based Water Supply and Sanitation Project would be fairly different than the contract-based implementation. The project implementation would involve no or minimum of contract. Construction material, skilled labour payment and technical support would be provided by DWSO and unskilled voluntary labors provided by the community. Execution of construction works would be the collective responsibility of the Water Supply and Sanitation Division/Subdivision Office (WSSDO) and the Water User's Committee members. WUC members will organize, supervise and control the quality of construction work with technical support provided by the DWSO technicians. Water Supply and Sanitation Technicians (WSST) would closely work with the WUC members in day to day basis and the Overseer Site-In-Charge would be the technical supervisor for all constriction activities. An Engineer-In-Charge of DWSO would be responsible for all overall implementation of the project and advise technicians and the WUC members on matters of specialized technical knowledge and know-how.

Inadequate knowledge of work specifications and lack of awareness on quality of construction among community, local labor and technicians is a major problem in maintaining the quality of construction. These Specifications are especially intended for the use and guidance of the DWSO technicians and the WUC members. Thus, it is purposefully structured in instructional form rather than a standard and legal document for strict quality control of work if a professional contractor. It is also meant to be a useful reference for Engineer-In-Charge of a community-based schemes. Though, these specifications might not be used directly for construction works under contract, for which other documents have to be referred. Nevertheless, this could be used as reference document for such purpose.

Specifications are simplified to the possible extent to make it relevant and applicable in a community-based construction works in rural environment.

Specifications for most common construction works in community-based rural projects have only been included. While quality of locally available construction materials, skill of voluntary and hired labor and availability of tools and equipments in rural surrounding has been given due consideration in these specifications, maintaining the quality of construction in any situation is emphasized

Any standard test requirements, inspection procedures, and difficult to implement in remote and rural situation, has been included as optional. Whenever appropriate, simple on-site tests should always be carried out and arrangements should be made for laboratory tests.

The community should be educated, advised and motivated for following the specifications and maintaining the quality of local construction material to be contributed by them and construction works to be implemented. Technicians and Site-In-Charge should inspect and ensure the quality of the construction material together with he WUC members at the source or query sites, before they are transported to the construction sites. This would avoid a embarrassing situation of rejecting the materials collected through hard work of the community at the construction site. Any construction material to be transported from district store should be inspected for quality before they are dispatched for construction site.

1. Site Work

That part of the site occupied by the works should be cleared of all trees, roots, vegetation, rocks, boulders etc., and as much topsoil as instructed by the Site-In-Charge. Cutting and filling of earth on the site should be done to lines, levels and slopes as shown in the Drawings or as instructed by the Site-In-Charge. Surplus earth from the excavation within the area, if found suitable, may be utilized for filling, but any earth required in excess should be obtained from dry earth free from debris, plants and vegetable matter. The site should be examined for field drains, and these, when found, should be either entirely removed or diverted and trenches filled with dry earth. All fillings should be done in 15 cm layers and consolidated as instructed by the Site-In-Charge.

After completion of the work, the work sites should be in a clean and sanitary condition.

2. Excavation

All excavation should be carried out to the lines and levels as shown in the Drawings or as instructed by the Site-In-Charge.

In the excavation of trenches or foundation any materials e.g. rocks, stone, tree, roots, old foundations should be removed and water drained out. Pumping out the water should be preferred if the pumping equipment can be made available at the site. If necessary temporary shoring should be fixed in order to safe guard any slips of earth and safety of the worker.

Provision should be made at site to the shore up, support and adequately protect any works in the vicinity likely to be affected by the excavation. Any damage to drains, floors, building, pipe lines or any other existing work, should be made good at the expense of the project fund after securing approval of competent authority.

No blasting should be carried out without the permission of the Site-in-Charge. In carrying out blasting, all precautions must be taken to avoid damage or injury to person or property and observe the regulation laid down by His Majesty's Govt. of Nepal.

Precaution should be taken to prevent water from surface, subsoil or rainwater from accumulating in the excavated area, and keep such excavation reasonably dry at all times. All the surplus material should be deposited or removed as instructed by the Site-In-Charge. Any excavated rock, if advised by the Site-In-Charge, may be broken up and used as rubble or metal required for the project work.

3. Excavation for Pipelines

Before excavation trenches for pipe lines, the alignment should be marked with pegs at 50 m stretch in straight section and at every bend.

The excavation should be carried out to the lines and levels shown in the plans and sections, and should be deep enough to permit a minimum cover of 900 mm. The trench width should be as per drawing or as advised by the Site-In-Charge.

Upto one-meter depth, the authorized width of trench for excavation shall be arrived at by adding 25 cm to the external diameter of pipe. The width of the pipe trench shall not be less than outside diameter of pipe plus 30 cm in case of gravel soil.

The width & depth of the trenches for the different diameters of pipe shall be :

diameter of pipe (mm)	*width of trench (cm)*	*depth of trench (cm)*
15 – 50	*45*	*90*
63 and above	*60*	*90*

During the works in progress, the whole of the working site should be kept dry and free from water and construct such temporary water courses and drains as may be necessary. As far as practical, locally available best quality timbers should be used. Needed tools, equipment and pumps etc. would be provided by the project. Whole work should be executed as quickly as possible, due care being taken to avoid excessive pumping, which may cause settlement of surrounding land and property.

Any trench or excavation which may have been taken to a greater depth than necessary should be filled into the required level with suitable material as advised by the Site-In-Charge and rammed with watering.

Roots of trees within the distance of about 0.5 m from the site of the pipeline shall be removed. The excavated materials shall not be placed within 1 m or half of the depth of the trench, which ever is greater, from the edge of the trench.

4. Excavation in Paved Area

In excavation through existing paved surface be carefully excavated on lines as advised by the Site-In-Charge. In every case, excavated material should be stacked

neatly and set aside for reinstatement of the surface, in such a manner so as not disturb traffic or pedestrians, and to the satisfaction of the Site-In-Charge. The trenches for pipes should be excavated to the lines and levels shown in the Drawings or as advised by the Site-In-Charge.

The finished surface after reinstatement should in no way differ from the original condition and should be restored to the satisfaction of the Site-In-Charge. All subsidence and subsequent settlement should be made good to the satisfaction of the Site-In-Charge and the local community.

5. Trenches for Foundation, etc.

All excavation for trenches for foundation, etc., should be carried out as already specified under "Excavation" and the bottoms of all trenches should be leveled off and consolidated. Foundation concrete or material of any kind should be deposited in the trenches or excavations under the supervision and instruction of the Site-In-Charge. If the trenches, etc., are excavated to a depth greater than that specified, they should be filled in to originally compacted condition as advised by the Site-In-Charge.

6. Filling in Trenches for Pipes

When the pipe joints have been assured for water-tightness, the trench should be filled in by replacing the excavated earth in layers, the first layer to be 30 cms thick and free from all stone and similar materials. Subsequent layers should be 15 cms thick, and, as far as possible, should be watered and rammed as the work proceeds. Special care should be taken to see that the earth is packed uniformly around and under the pipes to ensure a sound bearing throughout the entire length of pipe line, and watered and rammed carefully so as to avoid injury to the pipe. *Pipes in trenches on a slope shall have extra attention.*

Any subsidence after the first refilling should be leveled by adding the necessary extra material, which should then be thoroughly rammed for proper consolidation.

7. Filling Under Floors

The material used for filling under floors should be clean and of good hard composition, perfectly free from all organic and foreign matter, to the satisfaction of the Site-In-Charge. In the event of any surplus excavated material not being required for filling to trenches, leveling site, etc., may be used for filling under floors.

All filling should be in layers not exceeding 15 cms in thickness, each layer being well watered and rammed. All filling should be completed before any floor or roof-work is commenced.

8. Embankments

The materials for all filling should be inspected and approved by the Site-In-Charge before use. All soil from excavation, unless otherwise advised by the Site-In-Charge, should be used for forming the embankments. No stones or boulders should be deposited in embankments unless advised by the Site-In-Charge. All unsuitable and surplus material should be removed from site and disposed off.

Before any tipping in commenced, the turf and top soil should be removed to a depth of 20 cms from the site of the embankment and the top soil should be stored and used for soling the sides of slopes prior to turfing.

All subsidence in the embankments, which occur during construction, or during the period of maintenance, whether arising from the nature of the materials in the embankments, the nature of the ground on which the embankments rest or any cause whatsoever should be corrected to the designed finish level.

9. Turfing

The formed slopes of banks when thoroughly settled should be covered over with well matured grass turfing laid by hand in squares about 30 cms square and 5 cms thick and free from weeds or rank grass.

The squares should be tamped with specially prepared wooden rammers and lightly rolled over and watered daily over the entire area of turfing except during rain until the turfing is thoroughly established. The turf should be pegged down to prevent movement. The turfed area should be maintained by watering and keeping the area clean and weeded regularly.

10. Barbed Wire Fencing

The fencing should be of 6 or 7 strands of galvanized barbed wire secured to posts spaced at 1.5 m. centers, complete with necessary corner and straining posts and struts as shown in Type Drawings. The galvanized barbed wire should be 12 SWG with four points every 75 mm. The general arrangement and design of the posts and struts and foundations and methods of securing the barbed wire to the posts, stiffeners etc., should be as shown in Type Drawings.

11. Cement

All cement used on the works should be the best quality Ordinary Portland cement of approved manufacture and should comply with the requirements of the current NS. 49-2041 or equivalent Indian or British Standard.

Direct purchase should be made from a trusted dealer or distributor for ensuring quality and strength of the cement. The supplier should be enquired of the manufactured date and receipt at his store to verify the age of the cement. Suppliers

storage facility should also be inspected to verify possibility of quality deterioration during storage. Purchase should be made from latest received consignment and appropriately stored facilities.

Whenever appropriate and feasible in case of a contractor supplied cement, necessary test should be carried out at the construction site. The Site-In-Charge should take samples from any consignment of cement of testing in a approved laboratory. There should always be a sufficient supply of cement at the site to allow time for new consignment to be tested. The cement must be delivered in the manufacturer's sealed and branded bags. The costs of the tests should be borne by the contractor.

Whenever applicable, a pre-arrangement should be agreed with the contractor for production of Test certificates supplied by the manufacturers for each and every consignment and test procedures. The Engineer-In-Charge may at his discretion allow the use of the cement on the production of these certificates but should subsequent tests on samples from the consignment indicate it to be below the requirements of the NS, the Engineer-In-Charge may advise to demolished the works executed with such cement and refuse to allow the use of the cement.

Whatsoever may be the condition of the purchase, suitable whether-proof stores with raised wooden floors should be arranged, as may be necessary, to protect all cement at the site and all precautions must be taken to ensure that cement is stored in such a manner as to prevent deterioration or contamination.

No cooled, softened or retempered cement should be used and no crushing or reusing of partially set cement will be permitted - to maintain good quality of work required by the specification.

12. Aggregates

The material should be chemically inert in combination with cement used, strong hard, durable of limited porosity, clean and free from adhering coatings, Clay lumps and organic or the impurities which might cause the corrosion of reinforced cement or impair the strength or durability of the concrete. If required, all or any portion of the aggregate must be washed thoroughly as advised by the Site-In-Charge.

The maximum quantity of deleterious material shall not be more than 5% of the weight of coarse aggregate. (IS 383-1970)

Whenever feasible, periodic sampling and analysis of the aggregates should be done to maintain the quality and uniformity of the materials collected for use

Coarse aggregate should as far as possible be angular or rounded in shape. Aggregate with high percentage of flaky or elongated particles should be rejected. The amount of fine particles occurring in a free state or as a loose adherent should not exceed 1% when determined by the laboratory sedimentation test. After twenty-four hours in water, a previously dried sample should not gain more that 10% in weight.

Fine aggregate, whenever feasible should be natural sand. Fine aggregate derived by crushing coarse aggregate may be used in combination with natural sand in suitable proportions. The caustic soda tests for organic impurities should show a colour not deeper than of the Standard solution. The setting test for natural sand should be made and after being allowed to settle for three hours the layers of silt deposit on the coarse material should not exceed 8% and the layer of mica deposit should not exceed 2%.

The sand containing more than the allowable percentage of silt shall be washed so as to bring the silt content within the limit.

The aggregates should be stored in such a way as to prevent the admixture of foreign materials. The heaps of fine and coarse aggregates should be kept separate. Different sizes of fine or coarse aggregates should be stored in separate stock piles sufficiently removed from each other to prevent the material at the edge of the piles from getting intermixed.

Sand requiring for mortar for plasterwork shall conform to IS 1542-1977 and for masonry work shall conform to IS 2116-1980.

13. Water

As far as possible, only fresh and clean water free from all deleterious matter and chemically inert should be used for mixing mortar or concrete, and water from excavation should not be used. The Site-In-Charge should inspect the alternative water sources and advise the most suitable one to be used.

14. Bricks

The bricks should be the best quality available in the locality. It should be well burnt, true to shape and free from cracks, lumps and foreign matter and the structure when broken, should be uniform and compact. Site-In-Charge should inspect the brick kiln and approve the delivery. He should also bring samples for later comparison at the delivery to the site. Delivered bricks should be equal to the sample approved by the Site-In-Charge.

15. Timber

Whenever applicable, the timber for carpentry and joinery should be the Sal Wood of the best quality obtained from an approved saw mill. In remote hill area where such procurement is not feasible, and especially in case of the community contribution, the best locally available timber should be used.

The timber should be reasonably straight grained. All timber for the works is to be purchased or provided at the work-site immediately after the project started and should be stacked in open as long as possible before use.

All timber and assembled woodwork should be protected from the whether and stored in such a way as to prevent attack by termites, insects or decay fungi.

Where the timbers need to be extended into a wall, they should be thoroughly "brush treated" with a wood preservative, and as much clear air space maintained around the timber where it adjoins the wall as possible.

16. Structural Steel

(a) Materials and Workmanship should conform to the requirements of B.S., 449 or equivalent. All mild steel sections should conform to the requirements of B.S. 15 or equivalent.

(b) Necessary shop drawings together with a making plan indicating the location of the various individual members must be prepared before manufacturing.

(c) The process for all steel-work should include for all labour and materials involved in obtaining, transporting, cutting and fabricating, hoisting and fixing in position complete in accordance with the Drawings.

(d) All connections, unless specially detailed upon drawings to be supplied, should accord with standard practice as defined in the Handbook of an approved manufacturer and fabricator.

(e) As far as possible, all angles, cleats, and gussets, should be riveted to the respective members and bolts should only be used in the final field operation of connecting members together to produce the complete fabric.

Bolts should be of sufficient length of have at least one complete thread projecting beyond the outer face of the nut when tightened up and sufficient washers and/or taper washers should be provided in all cases. All bolt holes should have a clearance exceeding one-sixteenth of an inch.

(f) All welding is to be strictly in accordance with Section G of B.S. 449 or equivalent. Site-In-Charge in person should supervise the progress of welding work.

(g) All steel-work should be wire brushed and free from loose scale and rust and painted with one coat of red lead paint before being dispatched to the site. Surfaces brought into contact are to be first painted with red lead paint and bolted together whilst wet. After creation the painting should be inspected and all damaged areas, bolt heads etc., are to be painted as necessary.

(h) All cranking or RSJ, angle tees, and other sections is to be carried out, as far as possible, at manufacturer's or fabricator's works and the use of heat for bending or cranking should be done as per standard specification.

17. Reinforcement

The reinforcement should be :

(a) mild steel and medium tensils bars and hard-drawn steel wire conforming to IS : 1339 - 1960, *IS 432-1982 (Part I & II)*
(b) High strength deformed steel and wires for concrete reinforcement (IS 1786-1985)
(b) deformed bars conforming to IS : 1139 - 1959
(c) cold twisted steel bars conforming to IS : 1786 - 1960,
(d) hard-drawn steel wire fabric conforming to IS : 1566 - 1985,
(e) and structural steel sections conforming to IS : 226 - 1975,

All reinforcement when placed should be clean and free from loose mill-scales, dust, loose rust and coats of paint, oil, grease or other coatings which may destroy or reduce bond.

The sizes, positions and number of rods should be as shown in drawings. Rods should be bent cold and the dimensions of the bends etc. should be as shown in the schedule of reinforcement on the drawings.

If welded joints in reinforcement are used, test for important connections should be made to ensure that the joints are of the full strength of bars connected. Welding or reinforcement should be done in accordance with the recommendations of relevant Indian Standards for Welding of mild steel bars used in reinforced concrete construction.

Steel reinforcement should ordinarily be stored in such a way as to avoid distortion and to prevent deterioration and corrosion. It is a good practice to coat reinforcement with cement wash before stacking to prevent rust.

Weight chart for plain and torsteel is given in annex A

18. Concrete

(i) **Grade of Concrete**: Commonly four grades of concrete in rural construction are in use : M 10, M 15, M 20, and M 25.

In the designation of a concrete mix, letter M refers to the Mix and the number to the 28-day work cube compressive strength of that mix expressed in N/mm^2.

(ii) **Strength Requirements of Concrete** :

Where Ordinary Portland Cement conforming to NS. 49-2041 is used, the compressive strength requirements for various grades of concrete should be as shown in Table I below.

The strength requirements specified should apply to both controlled concrete and ordinary concrete. Preliminary tests need not, however, be made in the case of ordinary concrete.

Where the strength of a concrete mix, as indicated by tests, lies in between the strength for any two grades, such concrete should be classified for all purposes as a concrete belonging to the lower of the grades between which its strength lies.

TABLE I : STRENGTH REQUIREMENTS OF CONCRETE
(All Values in N/mm^2)

Grade of Concrete	Compressive Strength of 15 cm cubes		
	Preliminary Test Min	at 28 days Works Test Min	at 7 days Works Test Min
M 10	135	10	7
M15	200	15	10
M20	260	20	13
M25	320	25	17

(iii) Control Concrete

As far as possible controlled concrete should be used on all concrete works. Controlled concrete for use in plain and reinforced concrete structures should be in grades M 10, M 15, M 20 and M 25.

The concrete mix should be designed to have an average strength corresponding to the values specified for preliminary tests in TABLE I. The proportions chosen should be such that the concrete is of adequate workability for the conditions prevailing on the work in question and can be properly compacted with the means available.

Except where supply of properly graded aggregate of uniform quality can be maintained over the period of work, the grading of aggregate should be controlled by obtaining the coarse aggregate in different sizes and blending them in the right proportions when required, the different sizes being stocked in separate stock piles. The grading of coarse and fine aggregate should be checked as frequently as possible, the frequency for a given job should be determined by the Site-In-Charge to ensure that the uniform grading are maintained with that of the samples used in the preliminary tests.

In proportioning concrete, the quality of both cement and aggregate should be determined by weight, Water should be measured by volume in calibrated tanks or weighed. All measuring equipment should be maintained in a clean serviceable condition and their accuracy periodically checked.

It is most important to maintain the water-cement ratio constant at its correct value. To this end, determination of moisture contents in both fine and coarse aggregates should be made as frequently as possible, the frequency being based on wheather conditions. The amount of added water should be adjusted to compensate for any observed variations in the moisture contents. For determination of moisture content in the aggregates. IS:2386 (Part III)-1963 Methods of Test for Aggregate for Concrete may be referred to. To allow for the variation in weight of aggregates due to variation in their moisture content, suitable adjustments in the weights of aggregates should also be made.

Workability of concrete should be checked at frequent intervals. The slump test may be adopted for this purpose.

(iv) Ordinary Concrete

Where it is considered not practicable to use controlled concrete, ordinary concrete may be used for concrete grades M 10, M 15, M 20, and M 25. The proportions of materials for nominal concrete mixes for ordinary concrete should be in accordance with Table II.

In proportioning concrete, the quantity of cement should be determined by weight. The quantities of fine and coarse aggregates may be determined by volume, but these should also preferably by determined by weight. In the latter case the weight should be determined from the volume specified in Table II and the weight per liter of dry aggregate. If fine aggregate is moist and volume batching is adopted, allowance should be made for bulking in accordance with IS: 2386 (Part III)-1963. The water-cement ratios should not be more than these specified in TABLE II.

In proportioning concrete, the quantity of cement should be determined by weight, The quantities of fine and coarse aggregates may be determined by volume, but these should also preferably by determined by weight. In the latter case the weight should be determined from the volume specified in TABLE II and the weight per liter of dry aggregate. If fine aggregate is moist and volume batching is adopted, allowance should be made for bulling in accordance with IS: 2386 (Part III)-1963.

TABLE II : CONCRETE MIX PROPORTIONS

ORDINARY CONCRETE

Grade of Concrete	Total quantity of dry aggregates by volume per 50 kg of cement (sum of individual volumes of coarse and fine aggregates, max)	Proportion of fine aggregate to coarse aggregate	Quantity of water per 50 kg of cement, max
	Litres		Litres
M10	300	Generally 1:2 for fine aggregate to coarse	34
M15	220	aggregate by volume	32
M20	160	but subject to an	30
M25	100	upper limit of 1:1.5 & lower limit of 1:3	26

Note : It may be noted for general guidance that the grades of concrete listed correspond approximately to the nominal mixes generally used.

Grade of Concrete	Nominal Mix
M 10	1:3:6
M 25	1:2:4
M 20	1:1.5:3
M 25	1:1:2

The water cement ratios should not be more than these specified in TABLE II.

Workability of the concrete should be controlled by direct measurement of water content, making allowance for any surface water in the fine and coarse aggregates. The slump test in accordance with IS:1199-1959 may be used as a guide.

(v) Mixing of Concrete

Mechanical Mixing

Whenever feasible, mechanical mixing should be preferred. Concrete should be mixed in a batch mixer of approved type having a drum rotating about a horizontal or inclined axis. The speed of the drum is to be not more than twenty and not less than fourteen revolutions per minute. Each mixer is to be fitted with a water measuring device capable of accurate measurement to one gallon for one cubic yard mixer and pro data for smaller sizes and so arranged that the accuracy is not affected by variations in the water supply line.

The fine and coarse aggregate and the cement are to be mixed for at least four turns of the drum, after which the required amount of water is to be added gradually while the drum is in motion and the concrete then mixed for at least one and a half minutes and until of uniform colour and consistency. The volume of concrete mixed in any one batch is not to exceed the rated capacity of the mixer.

The whole of the mixed batch is to be removed before materials for a fresh batch enter the drum.

When mixing stops for any period exceeding 200 minutes, the mixer and all handling plant are to be washed out with clean water.

Hand Mixing

In hand mixing the aggregate and cement in the requisite proportions plus 10 percent of cement should be brought together and turned over twice in a dry state on the stage and after sufficient water to moisten the mass has been added the whole of the materials are again to be thoroughly turned over twice before leaving the stage in addition to any other turning which may be required to place the mass into the work.

(vi) Transporting of Concrete

Concrete should be transported from the place of mixing to the place of final deposit as rapidly as possible by methods, which will prevent the segregation or loss of the ingredients. It should be deposited as nearly as practicable in its final position to avoid rehandling or flowing within 30 minutes of the concrete materials being put into the mixer.

(vii) Placing of Concrete

Before the concreting in begun the form-work should be cleaned of all dust, wood shavings, pieces or wire or other extraneous matter.

A record should be kept on works of the time and date of placing the concrete in each portion of the structure. All surfaces (other than shuttering specially treated) upon or against which concrete is placed so that moisture will not be drawn from the concrete.

All excess water and laitance which appears on the surface of concrete which has been finally worked into place should be carefully removed before it has time to set.

(viii) Consolidation by Hand

The Concrete should be deposited in layers not greater than 30 cm thickness and after deposition, it should be well rammed into place with suitable rammers and should be worked until it has been made to penetrate and fill completely all spaces around and between reinforcing bars and until all air has been expelled from the mass. The

concrete should be carefully worked against the form-work until all concrete faces should be free from air and water voids and is should not thereafter be disturbed.

(ix) Consolidation by Vibration

Whenever feasible, mechanical vibrators should be used for consolidation of concrete. Concrete should be placed in layers of thickness not more than height of the vibrator and each layer should be vibrated by methods, which will not permit the ingredients to segregate. Vibration should not be used to distribute to concrete.

The vibration should be sufficiently intense to cause the concrete to consolidate or settle readily into place and should be determined at site, depending on the effective range of the vibrator under the particular circumstances.

An adequate number of vibrators should be used so that at the required rate of deposition, vibration and complete compaction are secured throughout the entire volume of each layer of concrete. A sufficient number of spare vibrators should always be available.

Internal vibrators be immersed in the concrete for periods not longer than 3 minutes or until liquid starts to collect on the surface of the concrete adjacent to the vibrator and withdrawal should be at a rate not exceeding 8 cms, per second. Care should be taken to ensure that the vibrator should not disturb concrete, which has been mixed longer than 30 minutes.

When vibrators are used they should be so located that forms in contact with concrete, which has been mixed over 30 minutes are in no way disturbed.

Vibrating should be restricted to concrete of 'low slump' and all other concrete should be hand punned.

(x) Construction Joints

Concerting should be carried out continuously to pre-determined construction joints, in positions shown in the Drawings or as advised by the Engineer-In-Charge.

All construction joints should be of tongue and groove formation and where possible, the width of groove should be one-third of the thickness of the wall or slab in which the joint is being formed and of adept one-half the width of the groove. Any alternative proposal should be approved by the Engineer-In-Charge.

Horizontal construction joints in the wall should be kept to the minimum and when unavoidable should be spaced and so made that the planes of junction between each successive lift of concrete should be truly horizontal and continuous around the structure.

Vertical construction joints in the wall should be made in accordance with the Drawings and should be so placed as to reduce the accumulative setting contraction to a minimum. Vertical construction joints in the reservoir walls should be continuous for the full height of the wall and they should include a water barrier.

Where horizontal construction joints are unavoidable and concreting is to be resumed on horizontal surfaces of set concrete, the surface should be thoroughly roughened by approved means and all dross should be removed to expose clean concrete. The surface should be washed and spread over with a 1/2 layer of cement mortar 1:2, immediately before, fresh concrete is deposited.

Vertical faces should be similarly treated except that they should be covered with freshly mixed cement grout immediately before the fresh concrete is placed in lieu of the cement mortar in the horizontal joint.

(xi) Expansion Joints

Expansion and contraction joints should be formed in the wall and roof of the reservoirs in strict accordance with the designs and position shown in the Drawings.

(xii) Curing

Concrete should, after being placed, be suitably protected during the first stages of hardening from the harmful effects of sunshine, drying winds, heavy rain, surface water and shocks. The concrete made with normal setting cement should be prevented from drying out for not less the 7 days by continuous spraying of water or covering with damp sand or any other approved means that may be convenient and effective. When rapid hardening cement are used special attention should be given to the maintenance of moist conditions of curing, in particular, concrete made with high alumina cement should be kept thoroughly wet for the first 24 hours.

(xiii) Tests

Wherever feasible, arrangements for testing the strength of the concrete should be made. The Site-In-Charge should make, under conditions exactly similar to those of the actual work, four six inch cubes in steel moulds. The cubes should be sent to a testing laboratory, where two cubes of each set will be tested when seven days old and the remaining two at twenty-eight days old. An identification mark must be placed on each cube, and keep a record of casting and proportions, & should notify such information to the testing laboratory when forwarding the cubes. The minimum results of each cube should not be less than the values given in TABLE I.

(xiv) Finishes to Exposed Faces of Concrete

All the faces of the concrete should be rubbed down immediately after the formwork has been struck and any fins and other projections should be removed and all places

which appear rough or of imperfect texture should be at once treated to produce a satisfactory surface.

Horizontal concrete surface which will not be finished against form-work should be brought to an even surface by means of screwed and tempers and be given a smooth finish by the use of floats during the operation of placing.

Where a non-slip finish to threads of stairs or elsewhere is called for, it should be obtained by using coarsely ground cement and broken stone aggregate. Gravel aggregate should not be used. Any special method proposed for producing an effective surface should be as advised by the Engineer-In-Charge.

Where a tooled finish is required the operation should be carried out with an efficient equipment in order to give the desired effect. Attention is drawn to the close relations between the distribution of the aggregates in the concrete and the surface appearance when the skin has been removed.

(xv) Fair Faced Concrete

Where so described or measured, faces on concrete should be finished by means of form-work lined good quality hardboard, so as to produce a perfectly true surface and should have all imperfections on the concrete face cut out, made good in cement mortar to match the texture and colour of the concrete and rubbed down with Carborundum stones dipped in cement grout to finish clean and smooth to a high standard, without trace of shuttering marks, joints or other disfigurement.

(xvi) Holes, Pipes etc.

The Site-In-Charge should take care in incorporation of electrical conduit pipes, fixing blicks, chases, holes etc., in concrete members as required and make sure that the strength of effective cover of any part of the structure is not adversely affected or the finished work damaged by any movement of the blocks. All fixing blocks, chase, holes, etc., to be left in concrete, should be accurately set out and cast with the concrete. Openings, chases, holes or other voids should only be cut or formed in concrete under the supervision of the Site-In-Charge.

(xvii) Timber Form-work

Form-work for fair faced work should be made of planed and dressed timber or undressed timber lined with a good quality fiber board. A board mark finish may be used for all other surfaces. The form-work should be constructed accurately to represent the shape of the work to be built. For circular work the curvature of the forms should correspond to the designed circumferences. The form-work should fit so as to prevent the leakage of liquid and should be so finished on the faces in contact with the concrete as to leave the concrete with a perfectly smooth face. The interior face of all form-work should be coated with preparation to prevent the adhesion of the concrete thereto and the preparation used should not stain the concrete. Joints in the

timber plates of fiber board in contact with the concrete should be uniformly spaced and should be truly horizontal and/or vertical.

The strutting and bracing of the form-work should be such that there should be no deformation of the forms under the weight of the plastic concrete and no appliances for supporting form-work or staging should be fixed into the permanent structure except when advised by the Engineer-In-Charge.

Form-work should be so constructed that its removal can be affected without damage to the concrete either by shock or vibration or by any other cause. Where holes are boxed out in the concrete for the subsequent building in of pipes brackets, rag bolts and other ironwork and fittings, the boxes should be accurately set out and positioned and securely fixed. Should any of the boxes become dislodged and/or displaced during the placing of the concrete or should the boxes be found subsequently to be in any way of the required true position or to have been omitted altogether the additional cutting out of the concrete and making good should be carried out under the supervision and direction of Engineer-In-Charge. To use other methods for building-in the above ironwork or fittings, such methods should only be used with Engineer-In-Charge's approval.

The removal of form-work should always be supervised by the Site-In-Charge and it should be ensured that no excessive loads are permitted to come upon the new work.

No form-work or staging should be struck or slackened without the presence of the Site-In-Charge. The minimum periods of time, which should elapse between pouring the concrete and striking or slackening the form-work on the various classes of work should be as follows;

Class of Work	**Type of Cement**
Vertical faces of walls and columns	2 days
Sides of beams and lintels	2 days
Soffits of slabs (subject to 10 days props retention)	4 days
Soffits of beams and lintels (subject to 14 days props retention)	7 days

19. **Cement Mortar and Grout**

Cement mortar, where specified should be composed of Portland cement, and clean sharp sand in the proportion stated. The ingredients should be properly gauged, and the sand and cement should then the thoroughly mixed by turning them over at least twice dry, upon a watertight stage as specified for concrete. Sufficient water should then be added to give a stiff consistency, and the mixture should be turned over twice

wet. The mortar should be used immediately after it has been mixed, and any that has stiffened by commencing to set should not be used, over though fresh cement were to be mixed with it. In the case of grout, sufficient water should be added to the mix enable it to be poured into joints or voids.

20. Cement Rendering

The cement rendering should consist of two coats. the rendering coat should be composed of cement and sand in specified proportions, 15 mm thick (unless otherwise specified), and the surfaces setting coat of neat cement 3 mm thick applied within half an hour of the completion of the rendering. The total thickness should be as specified in the drawing.

All rendering must be protected from the weather and suitable and adequate coverings must be fixed in advance. The rendering should be kept damp while setting.

The rate for rendering should include for all scaffolding ladders, platforms, etc., and for striking out joints of brick work and hacking or roughing concrete surfaces to form a key, brushing down and thoroughly saturating all surfaces with water immediately before rendering and for forming, all rises, covers, chamfers and stopped edges against woodwork etc.

Any rendering, which is defective should be cut out and rendered again.

21. Cement Rendering to Invert

The inverts in drains and manhole, etc., should be of cement and sand mixture 1:2 and should be finished to an even and polished surface with a float, trowels or other suitable tool, special care being taken to obtain perfectly smooth faces. Unless otherwise specified, it should be 19 mm in thickness.

22. Concrete Floors

All concrete floors, excluding the surface layer, are to be cast to the full specified thickness and as shown in drawings in one continuous operation for any given section in hand. The surface should not be smooth but when set wet for a period of at least fourteen days and afterwards retained in position as a protection during construction work and until such time as is expedient to lay the surface layer. The sand protection should be swept away and the base layer thoroughly washed, cleaned and saturated with water before the application of the surface layer which should be finished smooth to the approved sample area.

No sprinkling of neat cement or addition of water or excessive trowelling to obtain a smooth surface should be allowed.

Expansion joints should be formed as directed by Engineer-In-Charge or necessary by inserting strips of straight, smooth, sheet iron, or by planed wood strips tapered 7 mm such strips should extend from the surface of the floor to the reinforcement and should be left in place until the concrete is firm but not fully set, when they should be gently removed and the concrete edges carefully tripped up. Later and just before the completion of the building these open joints should be carefully cleaned out and filled with a mixture of cement and sand 1:2 well rammed in, the addition of a good quality pigment. The edges of the joints are to be carefully protected throughout the work.

After the concrete has been laid and is firm it should be well and continuously watered for fourteen full days and after it is hard enough to bear it should be covered with a layer of jute hessian or sand not less than 12 mm thick and kept so, far the duration of all the major carcass building operations.

23. **Brick Floors**

Brick floors should be laid perfectly level, or to falls, as advised by the Site-In-Charge with good sound bricks as specified in clause for Bricks, bedded and jointed in lime and sand 1:2 and rendered with cement and sand 1:2 not less than 12 mm thick with the top surface finished smooth. All brick joints should be raked out before cement rendering is done.

24. **Chambers**

All valves should be provided with suitable chamber or chambers as shown in details in drawings and as advised by the Engineer-In-Charge for each and every purpose.

25. **Lintels**

Concrete lintels should be cast in situ of concrete composed of one part cement two parts sand and four parts stone broken to pass a 19 mm ring, (1:2:4). The bearing should be at least 22 cm at each end unless otherwise shown or indicated and the reinforcing bars of diameter shown in plan, should be the full lengths of the inlet.

26. **Brickwork**

(i) Bonding Walls

Load-bearing brickwork generally should be of Quetta Bond (nominal thickness 35 cms) and reinforced as shown in the detailed drawings. One brick walls (nominal thickness 23 cms) should be in English Bond and half brick walls (nominal thickness 11 cms) in Stretcher Bond. No broken bricks or bats should be used unless required to or bond.

All perpernds, quoins, reveals and other angles of walls should be built strictly true and square.

(ii) Setting Out Wall

Proper setting-out rod and set out all work on same for corners, openings, heights, etc., should be provided and should build the walls and piers etc., to the width, depth and height indicated on the drawings and as advised by the Engineer-In-Charge.

(iii) Wall Building

Bricks should be wetted before being laid and the top of walling where left off should be wetted before re-commencing building. Walls to be kept wet for three days after building. Bricks should be well buttered with morar before being laid and the brickwork carried up evenly course by course and so that no part is allowed to be carried up more than 50 cm higher at any time than any other part.

(iv) Wall Finish

Where Walling is to be finished with a fair face, the bricks are to be selected so that the exposed face is free from defects and the joints finished flush as the works proceed. The faced work should be kept perfectly clean and no rubbing down of brickwork will be allowed.

Where brickwork is to be plastered the joints should be raked out as the work proceeds.

(v) Mortar

All mortar should consist of cement, lime, sand in the proportion as shown in the drawings.

The ingredients of mortars should be measured in proper gauge boxes on a boarded platform all being mixed dry and again whilst adding water. In the case of cement/lime mortar, the sand and lime should be thoroughly mixed to a uniform consistency with only sufficient water to obtain a plastic condition suitable for trowelling. Mortar, which has commenced to set should not be used or knocked up again for use.

(vi) Filling of Brickwork

Where brickwork cavities are specified to contain reinforcing bars they should be filled with the grade of appropriate concrete specified. The filling should be placed and consolidated in section not exceeding 3 feet in height. Cavities that are to be filled should be kept free of all mortar dropping.

(vii) Brick Lintels

Lintels over doors and under openings except where in concrete, should be formed in brickwork by reinforcing the three courses immediately above and opening with steel wire reinforcement projecting 45 cm at either end of the opening.

(viii) Putlog Holes

All putlog holes should be not less than one course deep and carefully filled with bricks cut to fit size of opening beds and joints filled with mortar well tamped in after the scaffolding is removed.

(ix) Keeping Clean

The fair faced brickwork should be kept free from mortar at all times and clean the work on completion.

(x) Damp Proof Course

Lay over the full width of the walls and at the height shown in the drawings a mortar screwed of sufficient thickness to form a level surface and cover the screwed with two coats of hot bitumen.

(xi) Sliding Joints

Where sliding joints are indicated on the drawings two layers of bitumen coated galvanized steel sheet should be provided.

27. **Placing of Reinforcement**

The number, size, form and position of all the steel bars, ties, stirrups and other members of the reinforcements should be in exact accordance with the drawings. They should be thoroughly cleaned and free from all scale, rust, etc., and be given a thick coat of cement slurry and should be placed in position shown and be securely wired and held there so as to prevent displacement before or during the process of concreting. A lap of not less than forty-five diameters should be provided at the junctions of all bars for which the lap is not specially detailed on the Drawings.

Reinforcements for beams and slabs should be temporarily supported in position by means of slings wherever possible, and where supporting blocks are permitted they should be removed in advance of the placing of the concrete.

Unless otherwise stated clear cover for reinforcements should be bar diameter or 12 mm, which is greater.

28. **Rubble Masonry, Stone Paving & Pitching**

Random Rubble stone should be hard, tough, sound, clean and regular on faces. Stone, for masonry works, should be derived from a source that normally and satisfactorily used for the masonry purpose. Stones directly from the river bed with round shapes are not allowed to be used. If quarry stones are not available then big boulder stones from the river should be allowed after breaking down to the required sizes and as advised by Site-In-Charge.

The joints should be broken vertically and staggered bond stones should be provided to the full wall thickness. More than one meter high wall should not be allowed and constructed at a time. Each stone should be 150 mm to 250 high, 200 mm to 300 mm long and 100 mm to 150 mm wide and the whole masonry work should be well bonded by cement mortar as mentioned in the drawings.

The faces of all stones showing externally should be rough hammer dressed to a convex surface. The mortar joints should be 15 to 20 mm thick or as advised by the Engineer-In-Charge. The mortar mix proportions for different works under this item should be as per the drawings. Finished stone cement masonry works should be wetted by water and prevented from drying out for at least seven days after construction.

Stone paving should be pitched by hand and set in places in such a manner as to secure the greatest possible compactness and solidity; the smaller interstices are to be filled in with stone chips firmly wedged in with hammers.

Rubble for pitching or paving is to be carefully bedded and grouted in cement mortar (1:3) to form and even surface, as shown in the Drawings or as advised by the Site-In-Charge.

29. **Roofing**

(i) C.G.I. Roofing Sheets

The corrugated galvanized iron sheets should be of 24 gauge thick or as mentioned in the drawings for all the works. the sheets should be secured to purlins with 6mm diameter "J" or "L" galvanized hooks of required lengths with bitumen washer, limber washer and nuts spaced minimum three numbers in each sheet along the purling. the fittings of sheets should be as per the printed instructions of the manufacturer. Ridges, valleys, barge boards, gutters, rain water down pipes etc. should be fitted and fixed neatly as required and shown in the drawings. The side lap should be two corrugations and end lap should be 200 mm. The sheets should, if possible, be obtained in sufficient length to cover each roof slope without any end laps. The fixing of CGI sheets with purlins and rafters should be as shown in the drawings.

(ii) Polythene Sheeting

Underlay sheeting should be "Visqueen" polythene building sheet of specific thickness and laid over rafters under tilling battens with minimum 30 cm lap.

(iii) Reinforced Cement Concrete Roofing

All as described under the section dealing with concrete.

30. **Doors and Windows**

All doors and windows should be of best quality locally available Sal unless otherwise specified and the timber should be free of defects of any kind. If Sal wood is unavailable the Engineer-In-Charge should advise the use of next best quality timber locally available. The dimensions etc. of the frame and sashes should be as shown in drawings. Good quality fittings should be used for the doors and windows should be approved by the Engineer-In-Charge. Where locks are provided they should be furnished with all necessary hardware including all duplicate set of key. The glass used should be 21 oz. and secured to the sashes with timber beads. All doors and windows should be painted or varnished as per the specification.

31. **General Joinery**

All joinery-doors windows, paneling, etc. should be executed in timber of quality specified under timber, will all faces brought perfect and prepared complete in every way for their respective finishes. The workmanship should be the best and all members when ready for fixing should hold the full dimensions specified in the Drawings and no allowances should be made for wrought surfaces. The frames should be properly morticed, tenoned, pinned etc., as the case may be and neatly finished including all labours such as chamfers, rebates grooves, moldings, etc. The joints should be bedded in pure white lead.

Frames butting against walls should be coated with hot tar and securely fixed to the brickwork with rawl plugs or equivalent, the heads of the screws being topped off with wooden plugs. The feet of all door frames and posts should be fitted to special cast concrete spur blocks (one part cement to three parts sand) projecting 2 inches above the floor and fitted with iron dowels let into spur stones and frames. The spur blocks should be jointed to the floor and or any other coves by small rounded coves in such a manner as to produce a neat, clean finish with no corners, which can hold dust or vermin. No door frame or any other timber must in any case be allowed to enter the floor.

All screws should be driven with suitable screwdrivers and any damaged screws should be withdrawn and replaced.

The fittings and furniture should be of approved type, manufacture and material, fixed with screws of the same material, and should match the rest of the fittings.

All exposed surfaces should be treated with two coats of paint, turnip or other substance as advised by Engineer-In-Charge.

32. **Mosquito Proofing**

Mosquito proofing should consist of suitable tinned, woven wire having not less than 20 meshes to the linear inch in light framing of timber approved by Engineer-In-Charge, secured to the structure in such a manner as to permit removal when required, as shown in the drawing. Only incorrodible material should be used.

33. **Painting**

(i) Delivery and Application of Paint

All materials should be delivered on site intact in the original drums or tins and should be mixed and applied strictly in accordance with the manufacture's instructions. All paints, emulsion paints etc. should be applied by means of a brush.

(ii) Addition to Paint

The only addition to be made locally will be liquid thinners supplied or recommended by the manufactures.

(iii) Colors and Priming

The priming undercoats and finishing coats should each be of differing tints & the priming and undercoats should be of the correct types and tints to suit the respective finishing coats in accordance with the manufactures instruction. Paint used for external work should be of exterior quality.

(iv) Rubbing Down

Each coat of paint should be properly dry and should be well rubbed down with fine glass paper before the next coat is applied. The paint work should be finished smooth and free form brush marks.

(v) Programme

The Site-In-Charge should arrange a work programme in such a way that all other trades are completed and away from the area to be painted when the painting begins.

(vi) Ironmongery, Protection and Cleaning Up

All ironmongery should be removed from joinery before painting is commenced and should be cleaned and renovated if necessary and refixed after completion of painting.

Cover up all floors, etc. with non-resinous sawdust or other approved covering when executing and painting decorating work.

Paint splashes, spots and stains should be removed from floors, woodwork, etc., and damaged surface touched up and the whole of the work left clean upon completion.

(vii) Preparation and Priming of Surface

(a) Concrete and Cement Rendered surfaces should be smooth and free from defects and should be allowed to dry out thoroughly. Surfaces should be thoroughly brushed down and left free from all efflorescence, dirt and dust. All such surfaces, which are to be finished with oil or enamel paint should be primed with two coats of alkali-resisting primer.

(b) Plastered surface should be perfectly smooth and free from defect. All such surfaces should be allowed to dry for a minimum period of four weeks. Surfaces should be stopped with approved plaster compound, rubbed down flush, thoroughly brushed down and left free from all efflorescence, dirt and dust.

All such surfaces, which are to be finished with oil or enamel paint should be primed with two coats of alkali-resisting primer.

(c) Fair faced surfaces should be dry, brushed down and free from dust or dirt and should be treated with an approved alkali-resisting primer (for plastic emulsion).

(d) Metalwork generally should be thoroughly wire brushed to remove all scale, rust etc., where severe rust exists, the special anti-rust primer must be used.

(e) Woodwork generally should be rubbed down, given one coat shellac knotting, one coat aluminum self knotting primer, and all cracks, nail holes, defects, and uneven surfaces, etc., stopped and faced up with hard stopping rubbed down flush.

All woodwork, to be polished, should be clean and free from dirt, dust and stains and filled.

Before oiling woodwork all stains must be removed and uniform colour obtained and filled.

(f) Wood Preservative-All woodwork, as specified or instructed should be treated after cutting and preparation but before assembly or fixing with three coats of solution consisting of one part of Atlas "A" wood preservative brown grade to three parts of water. The solution is to be brushed in all faces of all timers unless exposed to view and painted.

34. **Eaves Gutters**

All eaves gutters should be formed out of No. 22 B.W.G. galvanized iron and fixed to regular and even falls (one in 100) with wrought iron brackets at approximately 1.25 meter centers. The inside surface of eaves gutters should be painted with one thick coat bitumen and thickly sanded, eaves gutters should include for all angles, stopped ends, short lengths, etc.

35. **Valley Gutters**

Valley gutters should be formed with No. 18 B.W.G. galvanized iron 1m wide dressed into valley with edges turned up under tiling and weather boarding and nailed to boarding. Valley boarding to be 19 mm thick coated with bitumen.

36. **Rain Water Pipes**

(a) Rain water pipes should be formed of No. 20 B.W.G. galvanized iron rigidly fixed to walls to give 25 mm clearance. All bends, swan-neck bends, shoes and short length should be made.

(b) Rain water heads should be formed of No. 22 B.W.G. galvanized iron as described for pipes are similarly fixed to walls and have strong galvanized iron grating fixed over outlet. Interiors should be treated with bitumen.

37. **Preparation of Pipes**

All pipes should be inspected both internally and externally before being put up in positions for jointing or lowering into the trenches. They should be internally brushed through out (except in the case of pipes in coils) to remove any soil, but in such a manner that internal coating of pipes should not be scratched or injured in any way. The inside of the sockets and the outside of spigots should be carefully cleaned and small pipes tested to remove any accumulation, or obstruction.

After clearing and cleaning the pipes and assembling or placing them alongside the trench, ready for lowering, the length should be lowered into trenches under the supervision of the Site-In-Charge.

38. **Laying and Jointing of Galvanized Mild Steel Tubes**

When the pipes are to be cut or threaded the ends should be carefully filed so that no obstruction to bore is offered. The ends of the pipes should then be threaded conforming to the requirements of IS 554-1795 with pipe dies and taps carefully in such a manner as will not result in slackness of joints when the two pieces are screwed together. The screw threads of pipes and fittings should be protected from damage until they are fitted.

In jointing the pipes, the inside of the socket and the screwed end of the pipes should be oiled and smeared with white or red lead and wrapping around with a few turns of the fine spun yarn round the screwed end of the pipe. The end should then be tightly screwed in the socket, tee, etc. with the pipe wrench. Care should be taken that all pipes and fittings are properly jointed so as to make the joints completely water tight and pipes are kept at all times free from dust and dirt during fixing. *Burr from the joint shall be removed after screwing.* After laying, the open end of the pipes should be temporally plugged to prevent access of water, soil or any other foreign matter. *The pipe laid on level ground shall be laid with socket facing the direction of flow of water.*

39. Laying and Jointing of HDPE Pipes

Jointing

Fusion welding is commonly used in HDPE and is a permanent type of joint and should be carried out in accordance with Indian Standard: 7635 (Part II)-1975 or manufacturers instructions. The pipe should be cut square and the face of the pipe should be slightly scraped prior to welding to remove oxidized layer.

At the time of Welding, leveling of the pipes is essential particularly in case of larger diameter pipes, Welding temperature should be 200° C and surfaces of heating mirror should be 210 ± 50 C. The welding of the pipe should be held in either side of the heating mirror with only contact pressure of about 0.2KG/cm^2. When the rim of the molten material is found, the pipes are removed from the heating mirror and immediately the joint is made by application of moderate pressure of approximately 1 to 2 Kg/cm^2 for 2 to 3 seconds. The initial heating time for achieving molten rim varies from 1 to 5 minutes depending upon the pipe wall thickness and size. In the making of the joint care should be exercised on the following:

- the rim formed should not be excessive.
- while jointing the pressure should be maintained until the joint is lukewarm and after pressure is relived, the joint allowed to cool completely.
- the mirror should be kept exactly around 210° C. It is also essential to see that the temperature is maintained constant by the proper setting or regulator. *In case of electric mirror* For detecting the correct temperature, crayon chalk is used. For example at 220°C the colour of crayon dot on the mirror changes within 2 second. But the dot made should be thin and if no, time taken will be more, indicating a wrong temperature.

Flanged joints are used for jointing HDPE pipes particularly of larger size to valves and large size metal pipes where strength in tension is required. It consists of flanges

either loose or welded to the pipe ends. In most cases, sealing is improved by incorporating a natural or synthetic rubber gasket between flanges.

Bending

Small diameter pipes have a degree of flexible and this enables gradual curves to bt negotiated without the need for special bends or flexible coupling. The radius of the bend should be greater than 20 times the outside diameter of the pipe. Cold bends should only be used on pipes operating at ambient temperatures.

Forming of small radius bend may easily be done by the application of heat. The pipe should be heated to a temperature of 130°C in an inert liquid, such as glycerol (or any oil in emergency). Electrical heating coils or plates may be used only by experienced technicians.

In preheating operations, the low thermal conductivity of polyethylene should be kept in mind. Over heating can usually be recognized by surface discoloration and distortion. On the other hand bending operations should not be performed at too low a temperature, because of excessive stress that could result. At bending temperature, the bore of the pipe tends to collapse and therefore requires support during the bending operation. Internal support should be affected before heating by packing the bore of pipe with warm fine dry sand or by inserting rubber pressure hose, rubber rod, or a flexible spring. After the pipe is uniformly heated, it should be pulled around a simple jog and held in the correct position until cool. The radius of the bend of larger diameter will require an increase in radius.

Installation

While installing the pipes in trenches, the bed of the trench should be level and free from sharp edged stones. While laying in rocky areas suitable bed of sand or gravel should be provided. The initial back fill to about 10 to 15 cm above the pipe should be fine sand or screened excavated materials. In very hard rocky area, where excavation of trenches is not feasible or is not economical, GI pipes should be used with proper anchoring as shown in the drawing or as advised by the Engineer-In-Charge.

Where the gradient of the bed slopes is more than 30 degree it may be necessary to anchor a few pipes against sliding downwards.

All types of manual controls, and valves in particular should be anchored firmly so as to minimize the turning movement imparted to the pipe by operation of the hand wheel.

40. **Tools and Materials**

Necessary tools and accessories for laying and jointing cast iron, wrought iron, and HDP pipes should be arranged by the Site-In-Charge.

41. **Plugs**

As the pipe is laid, the front pipe in the trench should always be closed with a plug either of iron or wood and securely fastened. The observation of the above is extremely important and no excuse whatsoever will be accepted for non compliance. Waste ? or sacking of any form of plug other than properly prepared iron or wooden plug to fit various diameters should not be used. The plug should not be removed except, when pipe laying is resumed or for purposes of testing.

42. **Flanged Joints**

Flanged joints should be made with the joint rings and nuts washers and bolts provided. Two washers should be used per bolt one under the bolt head and the other under the nut. The tightening of bolts should be done evenly all round by tightening at one time diametrically opposite pairs. In no case should excessive tightening be exerted on any nut or bolt. After the satisfactory conclusion of the water-tightness test, all buried flange joints should be wrapped using mastic and tape supplied by the project.

43. **Butt-Welding of HDP Pipes**

The tools required for butt-welding are :

- Heating Plate
- Blowtorch or other source of heat
- Thermo chrome crayon
- Hacksaw (with blades)
- Scraper or knife

Other helpful tools are :
- Mould
- Mitre box
- Hand mitre saw

Following step-by-step welding procedure is given below to serve as guidance to the technicians;

(a) Hold pipes in the mitre box and cut it to the desired angle. Care should be taken to prevent movement of the pipe while cutting so as to prevent any change in the profile on the surface.

(b) Remove fibrous material with a scraper of knife to obtain a smooth surface. Care should be taken that the trimming of the pipe ends is complete over the entire pipe circumference. After trimming nothing should be allowed to touch the newly exposed faces.

(c) Check the joint for neat contact and true alignment. At no point of the joint should there be a gap of more than 0.5 mm.

(d) Heat the clean plate a short time. Pat marks with the thermo chromes crayon on it and continue with heating. During the heating the colour of the marks

will change from white to brown. When the marks are dry and brown, the plate has the right temperature of 220°C and the heating plate must be removed immediately from the blowtorch.

(e) It is very important to weld the correct heating plate temperature. Every new joints needs the same procedure. Hold the pipe ends on the two sides of the hot plate and press them gently until a low rim of melted material is formed.

(f) Remove the heating plate and without delay bring the pipe ends into contact under light but firm pressure. At no time should excessive pressure be applied. Keep pressure on the joint until it has cooled. It is recommended that contact with cold water should not be used in speeding up joint cooling.

(g) Every joint has to be checked by bending and good visual control.

44. **Jointing HDP Pipe to G.I. Pipe or G.I. Fittings**

HDP cannot be joined to metal by butt-welding, but there are several other methods of making such a joint. The two commonly used methods are jointing with flanges and joining with brass unions. Technicians should follow the manufacturer's recommendations for the making of these joints.

(i) Using Flanges

In making a flanged joint a flange set is used. A flanged set has :-

- one threaded flange
- one flange not threaded
- a HDP flange adapter
- rubber gasket and
- nuts and bolts to hold these together.

First the set is assembly by removing the bolts. Second, the flanges are screwed on to the G.I. Pipe. Third, the unthreaded flange is slide on to the HDP Pipe. Fourth, the gasket is replaced and the flanges are bolted together again.

(ii) Using Brass Unions

A brass union of this type consists of 5 parts:

- The union body, which has female threads on one end and male threads on the other.
- A brass ring, with female threads
- A brass expansion plunge
- A neoprene ring
- A neoprene gasket a flat rubber coaster

First the female threaded end of the union is screwed into the G.I. Pipe. Second, the brass ring is unscrewed and slides over the HDP pipe. Third, the neoprene ring is also slide over the pipe. Fourth, the end of the HDP pipe is heated until it becomes soft. Fifth, the expansion plunge is inserted into the HDP pipe, small end first. The nozzle should be pushed in until its large end is even with the pipe end, but no further. This must be done while the pipe end is still warm. Sixth, the neoprene gasket is placed in the male threaded union socket. Seventh, the brass ring is screwed tightly into the union.

45. **Air Valves**

Air Valves of the various diameters of inlet should be provided according to particulars shown in the Drawings. The air valve should be of the single or double type fitted with isolating valve and of approved manufacture. All valves should be tested by the manufacturer and be accompanied by a certificate of the same specifying their efficiency. The floating ball in the valve should be of suitable metal or vulcanite or rubber specially prepared for tropical conditions.

46. **Washout Valves**

Washout or scour valves should be provided at appropriate positions indicated on the plans and sections and at convenient points relative to draining of washout pipe. Suitable lead away arrangement should be made to discharge the washout water at a convenient point. Care should be taken to see that no local erosion takes place. Each valve should be housed in a suitable chamber as per details with cover and surface box.

47. **Testing of Pipe Lines**

Whenever possible, the pipeline should be tested after each section of the pipe line has been laid and jointed and anchorages built in for the bends, the pipe line should be tested in lengths of 500 meters or less under the supervision of the Site-In-Charge. Before testing, the trench should be partially backfilled except at the joints. The Site-In-Charge should arrange the accessories needed viz test pump. Pressure gauge, end pieces included connected valves and piping etc., for carrying out the hydrostatic tests. The pipes and joints found to be defective during the test should be replaced and or redone.

The two tests that should be carried out are :

(a) Pressure test at a pressure of at least the maximum working pressure; pipes and joints should be absolutely watertight under the test.

(b) Leakage test (to be conducted after the satisfactory completion of the pressure test) at a pressure specified for duration of two hours. Unless otherwise

specified the leakage test pressure should be the lower of $1^1/_2$ times the maximum static pressure that will be experienced by the section under test or the maximum allowable test pressure after installation.

Where any section of the main is provided with concrete thrust blocks or anchorages; the pressure test should not be made until at least five days have elapsed after the concrete was cast.

The procedure to be followed are as follows :

(a) Pressure Test

Each valve section of the pipe should be slowly filled with water and all air should be expelled from the pipe through hydrants and blow-offs. If these are not available at high places, tapping may be made at points of highest elevation before the test is made and plugs inserted after the tests have been completed.

If the trench has been partially back-filled the specified pressure based on the elevation n of the lowest point of the line or section under test and corrected to the elevation of the test gauge, should be applied by means of a pump connected to the pipe in a manner satisfactory to the Site-In-Charge. The duration of the test should not be less than 5 minutes.

All exposed pipes, fittings, valves and joints should be carefully examined. Any cracked or defective pipes, fittings and valves discovered in consequence of this pressure test should be removed and replaced by sound material and the test should be repeated. All joints showing visible leaks should also be re-caulked or redone until tight.

(b) Leakage Test

Leakage is defined as the quantity of water required into the newly laid pipe, or any valve section thereof, maintaining the specified leakage test pressure.

The pipe installation should be acceptable if the leakage is less than that determined by the formula

$$q1 = \frac{N\ D\ P}{3.\ 3}$$

Where, q1 = the allowable leakage in cm^3/h,
N = number of joints in pipeline length,
D = diameter in mm, and
P = average leakage test pressure in Kg/cm2.

Should any test of pipe laid disclose leakage greater than that specified, the defective joints should be repaired until the leakage is within the specified allowance.

48. Testing of Reservoir for Water-tightness

When the construction of the reservoir is completed, and before the filling of any earthen embankment, the Site-In-Charge should test it for water-tightness. The each compartment of the reservoir should in turn be filled with water gradually up to the level of the top of the partition wall (if any). IS 3370 (Part 1) General requirement, Code of practice for the concrete structures for the storage of liquids, specifies water tightness test at full supply level.

After allowing four days for the water to be thoroughly absorbed y the walls, the water level should be left undisturbed for seven days. If any diminution in water levels noticed other than attributable or evaporation the cause should be determined and necessary repairs should be made. Test for leaks and repair should be repeatedly done until the reservoir is completely watertight and satisfactory.

49. Water Proofing of Reservoirs/Structures

Waterproofing is to keep the unwanted water out of the system. It is not only a problem in old structures but also occurs in absolutely new construction. One of the basics of waterproofing is to lower the wettable characteristics of the concrete.

Waterproofing materials are permeability reducers or they impart to the concrete water repellent or hydrophobic properties. While the permeability reducers are effective for waterproofing even under hydrostatic pressures the water- repellents are normally suitable for damp proofing of structures where the entry of water is via the capabilities. The proprietary waterproofing materials are normally combinations of permeability reducing chemicals as well as water repellents and capillary pore blocking materials with hydrophobic properties.

Basically there are five general type of waterproofing treatment system. These are:

1. **Integral treatment system**- By waterproofing plasticiser & superplasticiser on mixing stage for concreting and plastering**.**

2. **Pressure grouting treatment system**- Injection of ultra fine cement with expanding grout additives or injection of polymer based and other epoxy based products to prevent the severe leakage.

3. **Flexible membrane system**- by coating of polymer modified cement based material or by other polyacrylic copolymer based material coating.

4. **Crystallization system**- by coating of cement based powder, which develops a catalytic reaction in the pores and capillary tracts of the concrete substrate and this reaction generates non -soluble fibrous crystalline growth up to the few millimeter depth inside from the surface of the concrete structures.

5. **Water-repellent surface coating system**- by application of hydrophobic silicone based transparent surface impregnator and sealing coat.

The most effective waterproofing treatment is flexible membrane system and injection grouting system.

50. Disinfection of Reservoir and Pipe Lines

(i) Reservoir

Whenever possible, Site-In-Charge should disinfect the reservoirs and the pipelines. The internal surfaces of the reservoir and external surfaces of all pipes and fittings within the reservoir should be thoroughly cleaned and if necessary scrubbed to remove all obvious contaminating matter and the water from the operations removed and drained out through the washout main.

The reservoir should then be filled with water containing hypochlorite or liquid chlorine solution in such quantity and such strength as will result in a concentration of free chlorine of not less than 10 parts per million. This chlorinated water should be allowed to remain in the reservoir for a minimum period of 24 hours and then flushed out.

The reservoir should be refilled with source/treated water and samples should be taken for bacteriological analysis. If the results of the analysis are unsatisfactory, the sterilizing process and refilling and sampling should be repeated until the analysis is satisfactory.

(ii) Pipe Lines

After the pipelines have been filled and flushed out to remove all debris and contaminating matter it should be filled with chlorinated water of strength as prescribed above in (i) and left to stand for 24 hours. Then the pipes should be flushed out and refilled with source/treated water.

If subsequent analysis reveals contamination, the sterilizing process should be repeated until satisfactory result is obtained.

51. **Gabions**

(i) Materials

Gabions should consist of steel wire mesh crates. The steel wire should be mild steel wire complying with I.S. 280 - 1962. All wire used in the manufacture of the crates or supplies in diaphragms, binding and connecting wire should be galvanized with an extra heavy coating of zinc by an electrolytic galvanized process. The weight of deposition of zinc should be a minimum of 260 grams per square metre equivalent for the gauge of wire specified. The wire should be woven into a hexagonal mesh with a minimum of 3 twists. All edge of the crates should be finished with a selvedge wire at least 3 gauges heavier than the mesh wire. Gabions should be manufactured in the standard sizes shown in Table 5 with mesh and wire sizes as shown in Table IV. Diaphragms should be manufactured of the same material as the parent gabion and should have selvedge wire throughout their perimeter. The number and size of diaphragms to be provided with each crate should be as in Table III. All crates should be supplied with binding and connecting wire of the gauges shown in Table IV of sufficient quantity to bind all diaphragms and closing edges. Filling for gabions will be clean hard angular stone. The smallest dimension of any stone should be at least twice that of the longer dimension of the mesh of the crate.

(ii) Assembly

Gabions should be assembled by binding the edges together at the selvedges with binding wire of the thickness shown in Table IV. The binding should be in the form of continuous lacing so that the interval between laces is approximately 50 mm. The diaphragms should be laced into position at the time of assembly leaving the "lids" of the crates open.

(iii) Filling

Except in the case of sack gabions, the crates should be placed in their final position before filling commences. They should be stretched to their full dimension and securely pegged to the ground or wired to adjacent gabions before filling. The vertical corners should be kept square and to full dimension by inserting a steel bar of at least 20 mm diameter at each vertical corner, maintaining it in the correct final position throughout the filling process and removing it when the crate if full. Before filling commences, the selvedges of the crate will be bound to the selvedges of adjacent crates with binding wire.

Where crates are being assembled in position in a wall the binding of the edges of each crate in the assembly process and the binding together of adjacent crates may be carried out in the same operation. The filling will be carried out by placing individual stones into the gabion by hand in courses in such a manner that the stones are bedded on each other and bonded as in dry random rubble masonry. No loose stones should be tipped into the crate and the practice of coursing and bonding the outer layer and filling the interior with unlid stones will not be permitted. When the crates are filled,

the lids will closed and the selvedges bound with binding wire as in the assembly process.

On completion the crates should be completely and tightly filled, square true to dimensions and the line and level shown in the Drawings.

TABLE III : STANDARD SIZE OF WIRE MESH GABIONS

Dimensions metres	Number of Diaphragms	Dimensions of Diaphragms metres	Volume of crate cubic metres
2x1x1	1	1x1	2
3x1x1	2	1x1	3
4x1x1	3	1x1	4
2x1x0.5	1	1x0.5	1
3x1x0.5	2	1x0.5	1.5
4x1x0.5	1	1x0.5	2
2x1x0.3	1	1x0.3	0.6
3x1x0.3	2	1x0.3	0.9
4x1x0.3	3	1x0.3	1.2

TABLE IV : STANDARD SIZED OF MESH AND WIRE IN GABIONS

Mesh Size Min	Thickness of mesh wire		Thickness of Binding and connecting wire		Thickness of selvedge wire	
	S.W.G.	mm	S.W.G.	mm	S.W.G.	mm
50x70	12	2.64	13	2.34	9	3.66
60x80	12	2.64	13	2.34	9	3.66
60x80	11	2.95	13	2.34	8	4.06
80x100	11	2.95	13	2.34	8	4.06
80x100	10	3.25	12	2.64	7	4.47
80x100	9	3.66	11	2.95	6	4.88
100x120	10	3.25	12	2.64	7	4.47
100x120	9	3.66	11	2.95	6	4.88

(iv) Timber Fenders

Where shown in the drawing aprons, steps or walls may be protected by timber fenders. In such cases, the timber fenders should be Sal wood of the size and at the intervals shown in the Drawings. They should be attached to the gabions by binding wire of the size specified for the crate selvedge at intervals equal to the smaller dimensions of the mesh size of the crate.

Nepal Standard for civil & Sanitary Engineering	
Ns 1 -2035	Ordinary Brick
Ns 9 -2036	Construction Lime
Ns 40 -2040	High Density Polythene Pipe
Ns 49 -2041	Ordinary Portland Cement
Ns 74 -2041	Treated Water for industrial use
Ns 76 -2041	Flooring Tiles
Ns 80 -2042	Hume Pipes
Ns 84 -2042	Mild steel rod
Ns 104-2042	C.I.Manhole cover frame
Ns 119-2042	Hollow concrete block
Ns 141-2043	Corrugated GI sheets
Ns 149-2044	Gunmetals Gate valves
Ns 161-2045	Plastic emulsion paints,Part 1 interior use/Part 2 exterior use
Ns 163-2045	Zinc coatings in wires
Ns 165-2045	Distemper oil/aciylic emulsion Paint
Ns 168-2045	Zinc coated barbed wires
Ns 169-2045	Mild steel wire
Ns 173-2045	Mineral Water
Ns 182-2045	Shovel
Ns 199-2046	Zinc coated mild pipe for water supply
Ns 206-2046	PVC Pipes for water Supply
Ns 222-2047	Sampling and testing method of sewage effluents
Ns 223-2047	Testing methods of water part 4 microbiological test
Ns 229-2047	limit of industrial effluent for disposal into surface water
Ns 246-2048	Vertically C.I.Pipes
Ns 254-2048	C.I Pipes
Ns 262-2048	Water Quality Terminology(Vocabulary) Part 1 and 2
Ns 268-2049	Salt Glazed stoneware Pipes
Ns 297-2050	Gravel aggregates
Ns 298-2050	Sampling methods of gravels
Ns 305-2050	Testing methods of gravels
Ns 332-2050	Testing methods of air pollution Part 1 to 5
Ns 338-2051	Shallow tube wells hand pumps
Ns 361-2053	Furrule for water services
Ns 362-2053	Bib taps and stop valves
Ns 382-2054	Copper alloys globe and check valves
Ns 383-2054	C.I Pipe fittings
Ns 384-2054	Portland slag cements
Ns 385-2054	Portland puzzolona cement

Ns 389-2054	Methods of measurment of buildings and civil enigneering works Part 1 to 11
Ns 392-2054	Cement concrete floor tiles
Ns 397-2054	Testing methods of CC flooring tiles Part 1 to 6
Ns 402-2054	Injection moulded HDP fittings
Ns 415-2056	Testing methods of fresh concrete
Ns 428-2058	Water meter (Domestic)

SECTION-VI

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 labor, 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, labor, 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 Labor

1. In calculating payments due to the Contractor for the execution of day works, the hours for labor will be reckoned from the time of arrival of the labor 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 labor 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 labor is employed on day work, calculated at the basis rates entered by it in the " SCHEDULE OF DAY WORK RATES: 1. LABOR". The rates for labor shall be deemed to cover all costs to the Contractor including (but not limited to) i) the amount of wages paid to such labor, transportation time, overtime, subsistence allowances, ii) any sums paid to or on behalf of such labor 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 labor 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	Insurance for the loss damage to works, plant, material, equipment, property and personal injury or death and as stipulated in agreement data	P.S	1.0	25000.0	25,000.00
2	Provide and maintain cube testing facilities including molds for the duration of the contract and preparation and testing of cubes, marking, curing, storing and transport to lab for tests and maintain full records (Equipment and molds to remain in the contractor's property), Paid as number of cubes for all complete work as per instruction of Engineer. (Spec. 1.4)	P.S	1.0	25000.0	25,000.00
3	Third Party Inspection cost, claim, variation, system automation, smart billing, quality test, items not covered by BOQ, etc.	P.S	1.0	10000.0	10,000.00
4	Preparation of As Built Drawing and for the preparation of O&M manual	P.S	1.0	5000.0	5,000.00
5	Provide color print photo in A4 size photo paper for inclusion in periodic progress report to the satisfaction of the engineer specification sheet A4 size color photo	L.S	30.0	100.0	3,000.00
6	Testing and Commencing of entire system as specified in the Conditions of Contract for at least 7 days.	P.S	1.0	15000.0	15,000.00
7	Provide and Installation of project information board of size 1.8mx1.2m along with iron posts including excavation, concreting, backfilling etc all complete as per Specification and instruction of the Engineer.	L.S	1.0	10000.0	10,000.00

2 Construction work

2.1 Water Supply System

2.1.1 Pumping System

2.1.1.1 RCC Reservoir-50m³

2.1.1.1.1 5 m3 Tank@ 2 no

Procument Item Details

SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
1	The work of Site cleareance, dressing surface, filling the hole, cutting the raised surface as per Specification and instruction of Engineer, all complete.	m²	50.0			
2	Earthwork in excavation in hard soil, by Manual as per Specification and instruction of Engineer, all complete.	m³	60.44			
3	Earthwork in filling wth ordinary soil as per Specification and instruction of Engineer, all complete.	m³	34.0			
4	Providing and laying dry stone soling on foundation as per Specification and instruction of Engineer, all complete.	m³	4.81			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
5	Providing and laying stone masonary (1:4) as per Specification and instruction of Engineer, all complete.	m^3	4.18			
6	Providing, laying, mixing, compaction and curing of P.C.C. (1:3:6) work in foundation as per Specification and instruction of Engineer, all complete.	m^3	1.68			
7	Providing, laying, mixing, compaction and curing P.C.C. (1:1.5:3) for RCC work with 2% WPC in foundation, walls, abutments as per Specification and instruction of Engineer, all complete.	m^3	8.44			
8	Providing, laying, mixing, compaction and curing of P.C.C. (1:2:4) for RCC work in Slab as per Specification and instruction of Engineer, all complete.	m^3	2.09			
9	Providing, making wooden form work including material selection, placement according to the design, nailing and spacing,withdrawal for simple structure as per Specification and instruction of Engineer, all complete.	m^2	82.67			
10	Providing steel reinforcement, cutting, bending & placing in place etc, as per Specification and instruction of Engineer, all complete.	kg	1980.96			
11	Providing and laying 12.5 mm thick 1: 3 cement-sand plaster as per Specification and instruction of Engineer, all complete.	m^2	38.58			
12	Providing and laying 3 mm thick 1:1 cement-sand punning as per Specification and instruction of Engineer, all complete.	m^2	38.58			
13	Providing and laying 12.5 mm thick 1: 4 cement-sand plaster as per Specification and instruction of Engineer, all complete.	m^2	58.07			
14	Providing and laying 2 coat of bitumen Paint on the burried surface of storage tank including surface prepartion as per Specification and instruction of Engineer, all complete.	m^2	14.72			
15	Providing and laying 2 coat of weather coat paint on the exposed surface of storage tank including surface preparation as per Specification and instruction of Engineer, all complete.	m^2	28.98			
16	Providing and laying GI water stopper 150 mm wide, 20 WSG as per Specification and instruction of Engineer, all complete.	m	41.28			
17	Providing and placing of 32 mm dia. GI pipe ladder 45 cm width-for tank inside as per Specification and instruction of Engineer, all complete.	no	2.0			
18	Providing and laying standard manhole cover set 60*60 cm as per Specification and instruction of Engineer, all complete.	set	4.0			
19	Providing, laying and installation of pipes and fittings and thread cutting for GI pipes as per Specification and instruction of Engineer, all complete.	job	2.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
20	Site levelling work as per Specification and instruction of Engineer, all complete.	job	2.0			
2.1.1.2 Pump / Operator House with Septic tank/Soak Pit						
2.1.1.2.1 Pump House						
Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
1	The work of Site cleareance, dressing surface, filling the hole, cutting the raised surface as per Specification and instruction of Engineer, all complete.	m^2	28.91			
2	Earthwork in excavation in hard soil, by Manual as per Specification and instruction of Engineer, all complete.	m^3	30.82			
3	Providing and laying dry stone soling on foundation as per Specification and instruction of Engineer, all complete.	m^3	3.58			
4	Providing, laying, mixing, compaction and curing of P.C.C. (1:2:4) work in foundation as per Specification and instruction of Engineer, all complete.	m^3	2.38			
5	Providing and laying stone masonary (1:6 C:S) as per Specification and instruction of Engineer, all complete.	m^3	20.11			
6	Providing, laying, mixing, compaction and curing of P.C.C. (1:2:4) for RCC work in Slab as per Specification and instruction of Engineer, all complete.	m^3	4.92			
7	Providing steel reinforcement, cutting, bending & placing in place etc, as per Specification and instruction of Engineer, all complete.	kg	529.28			
8	Providing, making wooden form work including material selection, placement according to the design, nailing and spacing,withdrawal for simple structure as per Specification and instruction of Engineer, all complete.	m^2	22.85			
9	Providing, making salwood frame work for doors and windows, including properly cured salwood selection, shaping, placement according to the design and level, nailing, holdfasting as per Specification and instruction of Engineer, all complete.	m^3	0.42			
10	Providing, making 38mm thick salwood Shutter for doors and windows, including properly cured salwood selection, shaping, placement according to the design and level, nailing, as per Specification and instruction of Engineer, all complete.	m^2	9.62			
11	Providing and laying 12.5 mm thick 1: 4 cement-sand plaster as per Specification and instruction of Engineer, all complete.	m^2	145.75			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
12	Providing and laying 2 coat of weather coat paint on the exposed surface of Pump house including surface cleaning and preparation for painting as per Specification and instruction of Engineer, all complete.	m^2	105.91			
13	Providing steel, cutting, bending, welding, surface finishing & placing in place of Grill for windows and door etc, as per Specification and instruction of Engineer, all complete.	kg	50.4			
14	Providing and laying 2 coat of enamel paint and primer on the exposed surface MS Grill gate and Window including surface cleaning and preparation for enamel painting as per Specification and instruction of Engineer, all complete.	m^2	5.36			
15	Providing, electrification of Pump House as per Specification and instruction of engineer, all complete.	job	1.0			
2.1.1.3 Supply Laying and Jointing of Pipes & Fittings						
Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
1	Earthwork in excavation manually in hard soil for pipeline/foundation trench as instruction of site Engineer	m3	428.4			
2	Earthwork in back filling for pipe line trench with compaction in layers of 20 cm, site clearance and all complete work	m3	428.4			
3	Transportation of HDPE 40 mm Dia PN-10 as directed by engineer	Kg	35.3			
4	Transportation of HDPE 32 mm Dia PN-10 as directed by engineer	Kg	112.5			
5	Transportation of HDPE 32 mm Dia PN-16 as directed by engineer	Kg	94.25			
6	Transportation of HDPE 25 mm Dia PN-16 as directed by engineer	Kg	49.5			
7	Transportation of HDPE 20 mm Dia PN-16 as directed by engineer	Kg	6.45			
8	Laying and Jointing of 40 mm PE Pipes with PE buttweld joits as per Clause 3 and other related clause of the specification and as directed by the Engineer	mtr	100.0			
9	Laying and Jointing of 32 mm PE Pipes with PE buttweld joits as per Clause 3 and other related clause of the specification and as directed by the Engineer	mtr	790.0			
10	Laying and Jointing of 25 mm PE Pipes with PE buttweld joits as per Clause 3 and other related clause of the specification and as directed by the Engineer	mtr	250.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
11	Laying and Jointing of 20 mm PE Pipes with PE buttweld joits as per Clause 3 and other related clause of the specification and as directed by the Engineer	mtr	50.0			
2.1.1.4 Sump Well (Intake)						
2.1.1.4.1 Intake						
Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
1	The work of Site cleareance, dressing surface, filling the hole, cutting the raised surface as per Specification and instruction of Engineer, all complete.	m^2	15.0			
2	Earthwork in excavation in hard soil, by Manual as per Specification and instruction of Engineer, all complete.	m^3	2.88			
3	Providing, laying, mixing, compaction and curing of P.C.C. (1:2:4) work in foundation as per Specification and instruction of Engineer, all complete.	m^3	0.48			
4	Providing, laying, mixing, compaction and curing of P.C.C. (1:2:4) for RCC work in wall as per Specification and instruction of Engineer, all complete.	m^3	1.88			
5	Providing and laying dry stone soling on foundation as per Specification and instruction of Engineer, all complete.	m^3	0.4			
6	Providing steel reinforcement, cutting, bending & placing in place etc, as per Specification and instruction of Engineer, all complete.	kg	105.81			
7	Providing, making wooden form work including material selection, placement according to the design, nailing and spacing,withdrawal for simple structure as per Specification and instruction of Engineer, all complete.	m^2	1.6			
8	Providing and laying 12.5 mm thick 1: 3 cement-sand plaster and curing as per Specification and instruction of Engineer, all complete.	m^2	12.33			
9	Providing and laying 3 mm thick 1:1 cement-sand punning and curing as per Specification and instruction of Engineer, all complete.	m^2	8.73			
10	Providing and laying Boulder stone soling on foundation as per Specification and instruction of Engineer, all complete.	m^3	0.83			
11	Providing and laying standard manhole cover set 60*60 cm as per Specification and instruction of Engineer, all complete.	set	1.0			
12	Dewatering work as per Specification and instruction of Engineer, all complete.	Job	1.0			
13	Providing, laying and installation of pipes and fittings and thread cutting for GI pipes as per Specification and instruction of Engineer, all complete.	job	1.0			

2.1.1.5 Submersible Casing Well Construction and Plateform work

2.1.1.5.1 Casing Well

Procument Item Details

SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
1	Earthwork in excavation in BMS dry soil including construction of shoring and bracing, removal of stumps and other deleterius matter as drawings and technical specifications and instruction of Engineer @ Depth upto 4m, all complete.	m^3	4.52			
2	Earthwork in excavation in hard soil, by Manual as per Specification and instruction of Engineer, all complete.	m^3	0.19			
3	Providing and laying dry stone soling on foundation as per Specification and instruction of Engineer, all complete.	m^3	0.29			
4	Providing, laying, mixing, compaction and curing of P.C.C. (1:2:4) work in foundation as per Specification and instruction of Engineer, all complete.	m^3	1.14			
5	Earthwork in filling wth ordinary soil as per Specification and instruction of Engineer, all complete.	m^3	3.27			
6	Preparation of casing pipe and Chain pully Pipe by cutting/welding/fitting all Complete Work as instructed by engineer	job	1.0			
7	Transportation of 10" casing pipe from store to site as directed by Engineer	job	1.0			
8	Installation of 10" casing pipe in well as instructed by Engineer	job	1.0			

Total of Procument Items

Total Item Price	
VAT	
Grand Total	

CONDITIONS OF CONTRACT AND CONTRACT FORMS

Table of Clauses

SECTION-VII

General Conditions of Contract

General Conditions of Contract

	General
1. Definitions	1.1 Boldface type is used to identify defined terms. (a) The **Accepted Contract Amount** means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects. (b) The **Activity Schedule** is a schedule of the activities comprising the construction, installation, testing, and commissioning of the Works in a lump sum contract. It includes a lump sum price for each activity, which is used for valuations and for assessing the effects of Variations and Compensation Events. (c) The Adjudicator is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in GCC 23.2 hereunder. (d) **Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Bid. (e) **Compensation Events** are those defined in GCC 50 hereunder. (f) The **Completion Date** is the date of completion of the Works as certified by the Project Manager, in accordance with GCC 68.1. (g) The **Contract** is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in GCC 2.3 below. (h) The **Contractor** is the party whose Bid to carry out the Works has been accepted by the Employer. (i) The **Contractor's Bid** is the completed bidding document submitted by the Contractor to the Employer. (j) The **Contract Price** is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract. (k) **Days** are calendar days; months are calendar-months. (l) **Dayworks** are varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant. (m) A **Defect** is any part of the Works not completed in accordance with the Contract. (n) The **Defects Liability Certificate** is the certificate issued by Project Manager upon correction of defects by the Contractor. (o) The **Defects Liability Period** is the period calculated from the Completion Date where the Contractor remains responsible for remedying defects. (p) **Drawings** include calculations and other information provided or approved by the Project Manager for the execution of the Contract. (q) The **Employer** is the party who employs the Contractor to carry out the Works, as **specified in the SCC**. (r) **Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works. (s) **Force Majeure** means an exceptional event or circumstance: which is beyond a Party's control; which such Party could not reasonably have provided against before entering into the Contract; which, having arisen, such Party could not reasonably have avoided or overcome; and, which is not substantially attributable to the other Party. (t) The **Initial Contract Price** is the Contract Price listed in the Employer's Letter of Acceptance. (u) **In writing** or **written** means hand written, type written, printed or electronically made, and resulting in permanent record.

	(v) The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is **specified in the SCC**. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order. (w) **Letter of Acceptance** means the formal acceptance by the Employer of the Bid and denotes the formation of the contract at the date of acceptance. (x) **Materials** are all supplies, including consumables, used by the Contractor for incorporation in the Works. (y) **Party** means the Employer or the Contractor, as the context requires. (z) **SCC** means Special Conditions of Contract (aa) **Plant** is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function. (bb) The **Project Manager** is the person **named in the SCC** (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract. (cc) **Retention Money** means the aggregate of all monies retained by the Employer pursuant to GCC 54.1. (dd) **Schedules** means the document(s) entitled schedules, completed by the Contractor and submitted with the Letter of Bids, as included in the Contract. Such document may include the Bill of Quantities, data, lists, and schedules of rates and/or prices. (ee) The **Site** is the area defined as such in the SCC (ff) **Site Investigation Reports** are those that were included in the bidding documents and are factual and interpretative reports about the surface and subsurface conditions at the Site. (gg) **Specification** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager. (hh) The **Start Date** is given i**n the SCC**. It is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates. (ii) A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site. (jj) **Temporary Works** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works. (kk) A **Variation** is an instruction given by the Project Manager which varies the Works (ll) The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as **defined in the SCC**.
2. Interpretation	2.1 In interpreting these GCC, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Project Manager shall provide instructions clarifying queries about these GCC. 2.2 If sectional completion is specified in the SCC, references in the GCC to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works). 2.3 The documents forming the Contract shall be interpreted in the following order of

	priority: (a) Contract Agreement, (b) Letter of Acceptance, (c) Letters of Bid, (d) Special Conditions of Contract, (e) General Conditions of Contract, (f) Specifications, (g) Drawings, (h) Bill of Quantities (or Schedules of Prices for lump sum contracts), and (i) Any other document **listed in the SCC** as forming part of the Contract.
3. Language and Law	3.1 The language of the Contract and the law governing the Contract are **stated in the SCC**.
	a. Throughout the execution of the Contract, the Contractor shall comply with the import of goods and services prohibitions in the Employer's country when (a) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's Country prohibits any import of goods from, or any payments to, a particular country, person, or entity. Where the borrower's country prohibits payments to a particular firm or for particular goods by such an act of compliance, that firm may be excluded.
4. Contract Agreement	4.1 The Parties shall enter into a Contract Agreement within 15 days after the Contractor receives the Letter of Acceptance, unless the Special Conditions establish otherwise. The Contract Agreement shall be based upon the attached Contract forms in Section IX.
5. Assignment	5.1 Neither Party shall assign the whole or any part of the Contract or any benefit or interest in or under the Contract. However, either Party (a) may assign the whole or any part with the prior agreement of the other Party, at the sole discretion of such other Party; and (b) may, as security in favor of a bank or financial institution, assign its right to any moneys due, or to become due, under the Contract.
6. Care and Supply of Documents	6.1 The Specification and Drawings shall be in the custody and care of the Employer. Unless otherwise stated in the Contract, one copy of the Contract and of each subsequent Drawing shall be supplied to the Contractor, who may make or request further copies at the cost of the Contractor.
	6.2 Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Employer. Unless otherwise stated in the Contract, the Contractor shall supply to the Engineer six copies of each of the Contractor's Documents.
	6.3 The Contractor shall keep, on the Site, a copy of the Contract, publications named in the Specification, the Contractor's Documents (if any), the Drawings and Variations

	and other communications given under the Contract. The Employer's Personnel shall have the right of access to all these documents at all reasonable times. 6.4 If a Party becomes aware of an error or defect in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.
7. Confidential Details	7.1 The Contractor's and the Employer's Personnel shall disclose all such confidential and other information as may be reasonably required in order to verify the Contractor's compliance with the Contract and allow its proper implementation.
	7.2 Each of them shall treat the details of the Contract as private and confidential, except to the extent necessary to carry out their respective obligations under the Contract or to comply with applicable Laws. Each of them shall not publish or disclose any particulars of the Works prepared by the other Party without the previous agreement of the other Party. However, the Contractor shall be permitted to disclose any publicly available information, or information otherwise required to establish his qualifications to compete for other projects.
	7.3 Notwithstanding the above, the Contractor may furnish to its Subcontractor(s) such documents, data and other information it receives from the Employer to the extent required for the Subcontractor(s) to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor(s) an undertaking of confidentiality similar to that imposed on the Contractor under this Clause.
8. Compliance with Laws	8.1 The Contractor shall, in performing the Contract, comply with applicable Laws.
9. Joint and Several Liability	9.1 If the Contractor is a joint venture of two or more entities , all such entities shall be jointly and severally liable to the Employer for the fulfillment of the provisions of the Contract, and shall designate one of such persons to act as a leader with authority to bind the joint venture. **The contractor shall not handover the responsibility of the contract to any one member or some members of Joint Venture or any other parties, not involved in the contract.** The composition or the constitution of the joint venture shall not be altered without the prior consent of the Employer.
10. Project Manager's Decisions	10.1 Except where otherwise specifically stated, the Project Manager shall decide contractual matters between the Employer and the Contractor in the role representing the Employer.
11. Delegation	11.1 The Project Manager may delegate any of his duties and responsibilities to other people after notifying the Contractor, and may cancel any delegation after notifying the Contractor.
12. Communications	12.1 Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered.
13. Subcontracting	13.1 A list of approved Subcontractors including its value/works is included as Article 2 (k) of contract Agreement. Approval by the Employer for any of the Subcontractors shall not relieve the Contractor from any of its obligations, duties, or responsibilities under the contract.

14. Other Contractors	14.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer between the dates given in the Schedule of Other Contractors, **as referred to in the SCC**. The Contractor shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification
15 Personnel and Equipment	15.1 The Contractor shall employ the key personnel and use the equipment identified in its Bid to carry out the Works, or other personnel and equipment approved by the Project Manager. The Project Manager shall approve any proposed replacement of key personnel and equipment only if their relevant qualifications or characteristics are substantially equal to or better than those proposed in the Bid. 15.2 If the Project Manager asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract. 15.3 If the Employer, Project Manager, or Contractor determines, that any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or other prohibited practices during the execution of the Works, then that employee shall be removed in accordance with Clause 15.2 above.
16. Employer's and Contractor's Risk	16.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.
17. Employer's Risks	17.1 From the Start Date until the Defects Liability Certificate has been issued, the following are Employer's risks: (a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to (i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or (ii) negligence, breach of statutory duty, or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor. (b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in the Employer's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed. 17.2 From the Completion Date until the Defects Liability Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is an Employer's risk except loss or damage due to (a) a Defect which existed on the Completion Date, (b) an event occurring before the Completion Date, which was not itself an Employer's risk, or (c) the activities of the Contractor on the Site after the Completion Date.

18. Contractor's Risks	18.1 From the Starting Date until the Defects Liability Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Employer's risks are Contractor's risks.
19. Insurance	19.1 The Contractor shall provide insurance in the joint names of the Employer and the Contractor from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles **stated in the SCC** for the following events which are due to the Contractor's risks: (a) loss of or damage to the Works, Plant, and Materials; (b) loss of or damage to Equipment; (c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and (d) Personal injury or death.
	19.2 Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation to be payable in the proportions of Nepalese Rupees required to rectify the loss or damage incurred. 19.3 If the Contractor does not provide any of the policies and certificates required, the Employer may affect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due. 19.4 Alterations to the terms of insurance shall not be made without the approval of the Project Manager. 19.5 Both parties shall comply with any conditions of the insurance policies.
20. Site Investigation Reports	20.1 The Contractor, in preparing the Bid, shall rely on any Site Investigation Reports referred to **in the SCC**, supplemented by any information available to the Contractor.
21. Contractor to Construct the Works	21.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings.
22. The Works to Be Completed within intended Completion Date	22.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Contractor, as updated with the approval of the Project Manager, and complete them within the intended Completion Date.
23. Design by contractor and Approval by the Project Manager	23.1 The contractor shall be responsible for the design of permanent works as **specified in SCC**. 23.2 Contractor shall be responsible for design of the Temporary Works. The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, for his approval. 23.3 All Drawings prepared by the Contractor for the execution of the temporary or

	permanent Works, shall be subject to prior approval by the Project Manager before their use. 23.4 The Project Manager's approval shall not alter the Contractor's responsibility for design of temporary works.
24. Safety, Security and Protection of the Environment	24.1 The Contractor shall, throughout the execution, and completion of the works and remedying of any defects therein: a. Have full regard for the safety of all persons entitled to be upon the site and keep the site (so as the same is under his control) and the works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons. b. Provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when necessary or required by the Project Manager or by any duly constituted authority, for the protection of the Works of for the safety and convenience of the public or others. c. Take all reasonable steps to protect the environment on and off the site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation. d. Ensure that any cut or fill slopes are planted in grass or other plant cover as soon as possible to protect them from erosion. e. Any spoil or material removed from drains shall be disposed of to designated stable tipping areas as directed by the Project Manager. f. Shall not use fuel wood as a means of heating during the processing or preparation of any materials forming part of the works. g. The Project Manager shall have the power to disallow any working practice or activity of the Contractor or direct that such practices or activities be modified should the Project Manager consider, on the advice of the relevant Government Departments, that the practices or activities will be harmful to wildlife. h. Provide on the Site such lifesaving apparatus as may be appropriate and an adequate and easily accessible first aid outfit or such outfits as may be required by any government ordinance, factory act, etc., subsequently published and amended from time to time.
25. Discoveries	25.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the employer. The Contractor shall notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them.
26. Possession of the Site	26.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the SCC, the Employer shall be deemed to have delayed the start of the relevant activities, and this shall be a Compensation Event.
27. Access to the Site	27.1 The Contractor shall allow the Project Manager and any person authorized by the Project Manager access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.

28.Instructions, Inspections and Audits	28.1 The Contractor shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is located. 28.2 The Contractor shall keep, and shall make all reasonable efforts to cause its Subcontractors and sub consultants to keep accurate and systematic accounts and records in respect of the Works in such form and details as will clearly identify relevant time changes and costs. 28.3 The Contractor shall permit the GoN/DP and/or persons appointed by the GoN/DP to inspect the Site and/or the accounts and records of the Contractor and its sub-contractors relating to the performance of the Contract, and to have such accounts and records audited by auditors appointed by the GoN/DP if required by the GoN/DP. The Contractor's attention is drawn to Sub-Clause 73.2 which provides, inter alia, that acts intended to materially impede the exercise of the GoN's/DP's inspection and audit rights provided for under this Sub-Clause constitute a obstructive practice subject to contract termination.
29. Dispute Settlement	29.1 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. 29.2 Any dispute between the Parties as to matters arising pursuant to this Contract which cannot be settled amicably within thirty (30) days after receipt by one Party of the other Party's request for such amicable settlement may be referred to Arbitration within 30 days after the expiration of amicable settlement period.
30. Procedures for Disputes	30.1 In case of arbitration, the arbitration shall be conducted in accordance with procedures in accordance with law of Nepal at the place given in the SCC.
	B. Staff and Labor
31. Forced Labor	31.1 The Contractor shall not employ forced labor, which consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty. This covers any kind of involuntary or compulsory labor, such as indentured labor, bonded labor, or similar labor–contracting arrangements.
32. Child Labor	32.1 The Contractor shall not employ children in a manner that is economically exploitative, or is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. Where national laws have provisions for employment of minors, the Contractor shall follow those laws applicable to the Contractor. Children below the age of 18 years shall not be employed in dangerous work.
33.Non-discrimination and Equal Opportunity	34.1 The Contractor shall not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. The Contractor shall base the employment relationship on the principle of equal opportunity and fair treatment, and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, promotion, termination of employment or retirement, and discipline. In countries where national law provides for non-discrimination in employment, the Contractor shall comply with national law. When national laws are silent on nondiscrimination in employment, the Contractor shall meet this Sub clause's requirements. Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job shall not be deemed

	discrimination.
	Time Control
34. Program	34.1 Within the time **stated in the SCC**, after the date of the Letter of Acceptance, the Contractor shall submit to the Project Manager for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works. In the case of a lump sum contract, the activities in the Program shall be consistent with those in the Activity Schedule. 34.2 An update of the Program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities. 34.3 The Contractor shall submit to the Project Manager for approval an updated Program at intervals no longer than the period **stated in the SCC**. If the Contractor does not submit an updated Program within this period, the Project Manager may withhold the amount stated in the SCC from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted. In the case of a lump sum contract, the Contractor shall Provide an updated Activity Schedule within 15 days of being instructed to by the Project Manager. 34.4 The Project Manager's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Project Manager again at any time. A revised Program shall show the effect of Variations and Compensation Events.
35. Extension of the Intended Completion Date	35.1 The Project Manager shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work, which would cause the Contractor to incur additional cost. 35.2 The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Project Manager for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information at least 21 days prior to the intended completion date. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date. Along with full supporting information the contractor shall also submit Performance Security, Advanced Payment Guarantee and insurance Policy with extended validity as well as revised work schedule.
36. Acceleration	36.1 When the Employer wants the Contractor to finish before the Intended Completion Date, the Project Manager shall obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Employer accepts these proposals, the Intended Completion Date shall be adjusted accordingly and confirmed by both the Employer and the Contractor. 36.2 If the Contractor's priced proposals for acceleration are accepted by the Employer, they are incorporated in the Contract Price and treated as a Variation.

37. Delays Ordered by the Project Manager	37.1 The Project Manager may instruct the Contractor to delay the start or progress of any activity within the Works.
38. Management Meetings	38.1 Either the Project Manager or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure. 38.2 The Project Manager shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.
39. Early Warning	39.1 The Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price, or delay the execution of the Works. The Project Manager may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible. 39.2 The Contractor shall cooperate with the Project Manager in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Project Manager.
C. Quality Control	
40. Identifying Defects	40.1 The Project Manager shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a Defect and to uncover and test any work that the Project Manager considers may have a Defect.
41. Tests	41.1 If the Project Manager instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the test shall be a Compensation Event.
42. Correction of Defects	42.1 The Project Manager shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is **defined in the SCC**. The Defects Liability Period shall be extended for as long as Defects remain to be corrected. 42.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Project Manager's notice.
43. Uncorrected Defects	43.1 If the Contractor has not corrected a Defect within the time specified in the Project Manager's notice, the Project Manager shall assess the cost of having the Defect corrected, and the Contractor shall pay this amount.
D. Cost Control	
44. Contract Price	44.1 In the case of a Unit Rate contract, the Bill of Quantities shall contain priced items for the Works to be performed by the Contractor. The Bill of Quantities is

	used to calculate the Contract Price. The Contractor will be paid for the quantity of the work accomplished at the rate in the Bill of Quantities for each item. 44.2 In the case of a lump sum contract, the Activity Schedule shall contain the priced activities for the Works to be performed by the Contractor. The Activity Schedule is used to monitor and control the performance of activities on which basis the Contractor will be paid. If payment for Materials on Site shall be made separately, the Contractor shall show delivery of Materials to the Site separately on the Activity Schedule.
45. Changes in the Contract Price	45.1 In the case of an Unit Rate contract: (a) If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent, provided the change exceeds 2 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change. (b) The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 10 percent, except with the prior approval of the Employer. (c) If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bill of Quantities. 45.2 In the case of a lump sum contract, the Activity Schedule shall be amended by the Contractor to accommodate changes of Program or method of working made at the Contractor's own discretion. Prices in the Activity Schedule shall not be altered when the Contractor makes such changes to the Activity Schedule.
46. Variations	46.1 All Variations shall be included in updated Programs, and, in the case of a lump sum contract, also in the Activity Schedule, produced by the Contractor.
	46.2 The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven (7) days of the request or within any longer period stated by the Project Manager and before the Variation is ordered. 46.3 If the Contractor's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs. 46.4 If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event. 46.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning. 46.6 In the case of an Unit Rate contract, if the work in the Variation corresponds to an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in GCC 45.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.

47. Cash Flow Forecasts	47.1 When the Program, or, in the case of a lump sum contract, the Activity Schedule, is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast.
48. Payment Certificates	48.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously. 48.2 The Project Manager shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor within 30 days of submission by contractor. 48.3 The value of work executed shall be determined by the Project Manager. 48.4 The value of work executed shall comprise: (a) In the case of an Unit Rate contract, the value of the quantities of work in the Bill of Quantities that have been completed; or (b) In the case of a lump sum contract, the value of work executed shall comprise the value of completed activities in the Activity Schedule. 48.5 The value of work executed shall include the valuation of Variations and Compensation Events. 48.6 The Project Manager may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.
49. Payments	49.1 Payments shall be adjusted for deductions for advance payments and retention. The Employer shall pay the Contractor the amounts certified by the Project Manager within 30 days of the date of each certificate. If the Employer makes a late payment, the Contractor shall be paid interest as indicated in the SCC on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made. 49.2 If an amount certified is increased in a later certificate or as a result of an award by an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute. 49.3 Items of the Works for which no rate or price has been entered in BOQ shall not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.
50. Compensation Events	50.1 The following shall be Compensation Events: (a) The Employer does not give access to a part of the Site by the Site Possession Date pursuant to GCC 26.1. (b) The Employer modifies the Schedule of Other Contractors in a way that affects the work of the Contractor under the Contract. (c) The Project Manager orders a delay or does not issue Drawings, Specifications, or instructions required for execution of the Works on time. (d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects.

	(e) The Project Manager unreasonably does not approve a subcontract to be let. (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site. (g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons. (h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor. (i) The advance payment is delayed. (j) The effects on the Contractor of any of the Employer's Risks. (k) The Project Manager unreasonably delays issuing a Certificate of Completion. 50.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Project Manager shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended. 50.3 As soon as information demonstrating effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager shall assume that the Contractor shall react competently and promptly to the event. 50.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor's not having given early warning or not having cooperated with the Project Manager.
51. Tax	51.1 The Project Manager shall adjust the Contract Price if taxes, duties, and other levies are changed between the date 30 days before the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected in the Contract Price or are a result of GCC 53.
52. Currency	52.1 The currency of Contracts shall be Nepalese Rupees.
53. Price Adjustment	53.1 Prices shall be adjusted for fluctuations in the cost of inputs only if **provided for in the SCC**. If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due. 53.2 Adjustment Formulae[1]: The formulae will be of the following general type:

[1] For complex Works involving several types of construction work with different inputs, a family of Formulae will be necessary. The various items of Day work may also require different formulae, depending on the nature and source of the inputs

	$$pn = A + b\frac{Ln}{Lo} + c\frac{Mn}{Mo} + d\frac{En}{Eo} + etc.$$ Where: *pn* is a price adjustment factor to be applied to the amount for the payment of the work carried out in the subject month, determined in accordance with Clause 49; *A* is a constant, specified in the Bidding Forms- Table of Price Adjustment data, representing the nonadjustable portion in contractual payments;[2]b, c, d, etc., coefficients representing the estimated proportion of each cost element (labor, materials, equipment usage, etc.) in the Works or sections thereof, net of Provisional Sums, as specified in the SCC; *Ln, Mn, En,* etc., are the current cost indices or reference prices of the cost elements for month "n," determined pursuant to Sub-Clause 53.4, applicable to each cost element; and *Lo, Mo, Eo,* etc., are the base cost indices or reference prices corresponding to the above cost elements at the date specified in Sub-Clause 53.4
	53.3 Sources of Indices and Weightings: The sources of indices shall be those listed in the Bidding Forms- Table of Price Adjustment data, as approved by the Project Manager and stated in SCC. Indices shall be appropriate for their purpose and shall relate to the Contractor's proposed source of supply of inputs on the basis of which his Contract shall have been computed. As the proposed basis for price adjustment, the Contractor shall have submitted with his bid the tabulation of Weightings and Source of Indices in the Bidding Forms, which shall be subject to approval by the Project Manager. 53.4 Base, Current and Provisional Indices: The base cost indices or prices shall be those prevailing on the day 30 days prior to the latest date for submission of bids. Current indices or prices shall be those prevailing on the day 30 days prior to the last day of the period to which a particular Interim Payment Certificate is related. If at any time the current indices are not available, provisional indices as determined by the Project Manager will be used, subject to subsequent correction of the amounts paid to the Contractor when the current indices become available. 53.5 Weightings: The weightings for each of the factors of cost given in the Bidding Forms shall be adjusted if, in the opinion of the Project Manager, they have been rendered unreasonable, unbalanced or inapplicable as a result of varied or additional work already executed or instructed under Clause 46 or for any other reason.
	53.6 Where, price adjustment provision is not applicable pursuant to Sub-clause 53.1 then the Contract is subject to price adjustment only for construction material in accordance with this clause. If the prices of the construction materials stated in the contract is increased or decreased in an unexpected manner in excess of ten (10%) percent in comparison to the base price construction material stated in Section –IV, Bidding Forms-Table of Price Adjustment Data, then the price adjustment for the increase or decrease of price of the construction material

[2] Insert a figure for factor A only where there is a part of the Contractors' expenditures which will not be subject to fluctuation in cost or to compensate for the unreliability of some indices. A should normally be 0.15. The sum of A, b, c, d, etc., should be one.

	beyond 10% shall be made by applying the following formulas: For unexpected increase in price $P = [R_1 - (R_0 \times 1.10)] \times Q$ For unexpected decrease in price P $= [R_1 - (R_0 \times 0.90)] \times Q$ Where: "P" is price adjustment amount "R_1" is the present price of the construction material (Source of indices shall be those listed in the Bidding forms) "R_0" is the base price of the construction material "Q" is quantity of the construction material consumed in construction during the period of price adjustment consideration If the Base price and source is to be proposed by the Bidder as per the provision made in Section –IV, Bidding Forms-Table of Price Adjustment Data then the Base price and source filled by Bidder for the construction material stated in the Bidding Form shall be subject to the approval of the Project manager and shall be as **stated in SCC**.. 53.7 The Price Adjustment amount shall be limited to a maximum of the initial Contract Amount **as specified in the SCC**. 53.8 The Price Adjustment provision shall not be applicable for delayed period if the contract is not completed in time due to the delay caused by the contractor or the contract is a Lump sum Contract
54. Retention	54.1 The Employer shall retain from each payment due to theContractor the proportion stated in the SCC until Completion of the whole of the Works. 54.2 Upon the issue of a Defects Liability Certificate by the Project Manager, **in accordance with GCC** 70.1, half the total amount retained shall be repaid to the Contractor and half when the Contractor has submitted the evidence of submission of tax return to the concerned Internal Revenue Office. The Contractor may substitute retention money with an "on demand" bank guarantee **having validity at least one month more than the end of defect liability period if:** (a) at least eighty (80) percent of the whole works have been completed, (b) progress of the works is satisfactory in accordance with the Contract as per approved work schedule, (c) it can be assured that the works can be completed at the intended completion date.
55. Liquidated Damages	55.1 The Contractor shall pay liquidated damages to the Employer at the rate per day **stated in the SCC** for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount **defined in the SCC**. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities. 55.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of

	repayment, at the rates specified in GCC.49
56. Bonus	56.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day **stated in the SCC** for each day (less any days for which the Contractor is paid for acceleration) that the Completion is earlier than the Intended Completion Date. The Project Manager shall certify that the Works are complete, although they may not be due to be complete.
57. Advance Payment	57.1 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 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.
	57.2 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. 57.3 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.
58. Securities	58.1 The Performance Security, including any additional security required as per ITB 32.5 and ITB 37.1, shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount **specified in the SCC,** by a Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law acceptable to the Employer, and denominated in Nepalese Rupees. The Performance Security shall be valid until a date 30 days from the date of issue of the Defect Liability Certificate in the case of a bank guarantee. Any additional performance security required as per ITB 32.5 shall be valid until a date 30 days from the date of issue of the certificate of Completion in the case of a bank guarantee. Any additional performance security required as per ITB 37.1 shall be valid until a date 30 days from the date of issue of the certificate of DLP in the case of a bank guarantee. 58.2 The performance security issued by any foreign Bank outside Nepal must be counter guaranteed by an Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.
59. Day works	59.1 If applicable, the Day works rates in the Contractor's Bid shall be used for small additional amounts of work only when the Project Manager has given written

	instructions in advance for additional work to be paid for in that way. 59.2 All work to be paid for as Day works shall be recorded by the Contractor on forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the work being done. 59.3 The Contractor shall be paid for Day works subject to obtaining signed Day works forms.
60. Cost of Repairs	60.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.
F. Force Majeure	
61. Definition of Force Majeure	61.1 In this Clause, "Force Majeure" means an exceptional event or circumstance, (a) which is beyond a Party's control; (b) which such Party could not reasonably have provided against before entering into the Contract; (c) which, having arisen, such Party could not reasonably have avoided or overcome; and (d) which is not substantially attributable to the other Party.
	61.2 Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied: (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies; (b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war; (c) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel; (d) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity; and (e) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.
62. Notice of Force Majeure	62.1 If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.
	62.2 The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.

	62.3 Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.
63. Duty to Minimize Delay	63.1 Each Party shall at all times use all reasonable endeavors to minimize any delay in the performance of the Contract as a result of Force Majeure.
	63.2 A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.
64. Consequences of Force Majeure	64.1 If the Contractor is prevented from performing its substantial obligations under the Contract by Force Majeure of which notice has been given under GCC 62, and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to GCC 30 to (a) an extension of time for any such delay, if completion is or will be delayed, under GCC35 ; and (b) if the event or circumstance is of the kind described in sub-paragraphs (a) to (d) of GCC 61.2 and, in the case of subparagraphs (b) to (d), occurs in the Country, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destructed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in GCC 19.
	64.2 After receiving this notice, the Project Manager shall proceed in accordance with GCC 10 to agree or determine these matters.
65. Force Majeure Affecting Subcontractor	65.1 If any Subcontractor is entitled under any contract or agreement relating to the Works to relief from force majeure on terms additional to or broader than those specified in this Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's nonperformance or entitle him to relief under this Clause.
66.Optional Termination, Payment and Release	66.1 If the execution of substantially all the Works in progress is prevented for a continuous period of 90 days by reason of Force Majeure of which notice has been given under GCC 62, or for multiple periods which total more than 150 days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 days after the notice is given, and the Contractor shall proceed in accordance with GCC 72.5.
	66.2 Upon such termination, the Project Manager shall determine the value of the work done and issue a Payment Certificate, which shall include (a) the amounts payable for any work carried out for which a price is stated in the Contract; (b) the Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the Contractor is liable to accept

	delivery: this Plant and Materials shall become the property of (and be at the risk of) the Employer when paid for by the Employer, and the Contractor shall place the same at the Employer's disposal; (c) other Costs or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works; (d) the Cost of removal of Temporary Works and Contractor's Equipment from the Site and the return of these items to the Contractor's works in his country (or to any other destination at no greater cost); and (e) the Cost of repatriation of the Contractor's staff and labor employed wholly in connection with the Works at the date of termination.
67. Release from Performance	67.1 Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises, which makes it impossible or unlawful for either or both Parties to fulfill its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance, (a) the Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract; and (b) the sum payable by the Employer to the Contractor shall be the same as would have been payable under GCC 66 if the Contract had been terminated under GCC 66.
G. Finishing the Contract	
68. Completion	68.1 The Contractor shall request the Project Manager to issue a certificate of Completion of the Works, and the Project Manager shall do so upon deciding that the work is completed. 68.2 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.
69. Taking Over	69.1 In the contractor's Opinion, if the works are complete and ready for taking over, the contractor may apply by notice to the Project Manager for a Taking-Over Certificate. If the Works are divided into Sections, the Contractor may similarly apply for a Taking-Over Certificate for each Section. 69.2 The Project Manager shall, within 30 days after receiving the Contractor's application: (a) issue the Taking-Over Certificate to the Contractor if physical progress of works is at least ninety (90) percent in accordance with the Contract except for any minor outstanding work and defects (as listed in the Taking-Over Certificate) which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or (b) reject the application, giving reasons and specifying the work required to be done by the Contractor to enable the Taking-Over Certificate to be issued. The

	Contractor shall then complete this work before issuing a further notice under this Sub-Clause. 69.3 If the Engineer fails either to issue the Taking-Over Certificate or to reject the Contractor's application within the period of 30 days, and if the Works or Section (as the case may be) are substantially completed in accordance with the Contract, the Taking-Over Certificate shall be deemed to have been issued on the last day of that period.
70. Final Account	70.1 The Contractor shall supply the Project Manager with a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 60 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 60 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a payment certificate.
71. Operating and Maintenance Manuals	71.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the **dates stated in the SCC**. 71.2 If the Contractor does not supply the Drawings and/or manuals by the dates **stated in the SCC** pursuant to **GCC 71.1,** or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount **stated in the SCC** from payments due to the Contractor.
72. Termination	72.1 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. 72.2 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract. 72.3 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 Project Manager gives two consecutive Notices to update the Program and accelerate the works to ensure compliance with GCC Sub clause 22.1 and the

	Contractor fails to update the Program 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**; 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, pursuant to GCC 73.1. 72.4 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under GCC 72.3 above, the Project Manager shall decide whether the breach is fundamental or not. 72.5 Notwithstanding the above, the Employer may terminate the Contract for convenience. 72.6 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.
73.Fraud and Corruption	73.1 If the Employer determines that the Contractor has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices, in competing for or in executing the Contract, then the Employer may, after giving 15 days' notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site. 73.2 Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with GCC Clause 15. For the purposes of this GCC 73; (i) "corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party. (ii) "fraudulent practice"[5] is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation; (iii) "collusive practice"[6] is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party; (iv) "coercive practice"[7] is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party; (v) "obstructive practice" is (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or (bb) acts intended to materially impede the exercise of the GON's/DP's

	inspection and audit rights provided for under GCC28.3.
74. Black Listing	74.1 Without prejudice to any other rights of the Employer under this Contract, GoN, Public Procurement Monitoring Office (PPMO), on the recommendation of procuring entity, may blacklist a Bidder for its conduct for a period of one (1) to three (3) years on the following grounds and seriousness of the act committed by the bidder: (a) if it is established that the Contractor has committed substantial defect in implementation of the contract or has not substantially fulfilled its obligations under the contract or the completed work is not of the specified quality as per the contract. (b) If convicted from a court of law in a criminal offense liable to be disqualified for taking part in procurement contract, (c) If it is established that the Contractor has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.
75. Payment upon Termination	75.1 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. 75.2 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.
	75.3 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.
76. Property	76.1 All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer if the Contract is terminated because of the Contractor's default.
77.Release from Performance	77.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.
78. Suspension of DP Loan/Credit/Grant	78.1 In the event that the DP suspends the loan/ credit/grant to the Employer from which part of the payments to the Contractor are being made: a. the Employer is obligated to notify the Contractor of such suspension within 7 days of having received the DP's suspension notice; and b. if the Contractor has not received sums due him within the 30 days for payment provided for in GCC 49.1, the Contractor may immediately issue a 15-day

	termination notice.
79. Eligibility	79.1 The Contractor shall have the nationality of an eligible country as specified in Section V of the bidding document. The Contractor shall be deemed to have the nationality of a country if the Contractor is a citizen or is constituted, or incorporated, and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed subcontractors or suppliers for any part of the Contract including related services.
	79.2 The materials, equipment, and services to be supplied under the Contract shall have their origin in eligible source countries as specified in Section V of the bidding document and all expenditures under the Contract will be limited to such materials, equipment, and services. At the Employer's request, the Contractor may be required to provide evidence of the origin of materials, equipment, and services.
	79.3 For purposes of GCC 79.2, "origin" means the place where the materials and equipment are mined, grown, produced, or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that differs substantially in its basic characteristics or in purpose or utility from its components.
80.ProjectManager's Duties and Authorities	80.1 The Project Manager's duties and authorities are restricted to the extent as **stated in the SCC**.
81.Quarries and Spoil Dumps	81.1 Any quarry operated as part of this Contract shall be maintained and left in a stable condition without steep slopes and be either refilled or drained and be landscaped by appropriate planting. Rock or gravel taken from a river shall be removed over some distance so as to limit the depth of material removed at any one location, not disrupt the river flow or damage or undermine the river banks. The Contractor shall not deposit excavated material on land in Government or private ownership except as directed by the Project Manager in writing or by permission in writing of the authority responsible for such land in Government ownership, or of the owner or responsible representative of the owner of such land in private ownership, and only then in those places and under such conditions as the authority, owner or responsible representative may prescribe.
82. Local Taxation	82.1 The prices bid by the Contractor shall include all taxes that may be levied in accordance to the laws and regulations in being in Nepal on the date 30 days prior to the closing date for submissions of Bids on the Contractor's equipment, plant and materials acquired for the purpose of the Contract and on the services performed under the Contract. Nothing in the Contract shall relieve the Contractor from his responsibility to pay any tax that may be levied in Nepal on profits made by him in respect of the Contract.
83. Value Added Tax	83.1 The Contract is not exempted from value added tax. An amount specified in the schedule of taxes shall be paid by the Contractor in the concerned VAT office within time frame specified in VAT regulation.

84. Income Taxes on Staff	84.1 The Contractor's staff, personnel and labor will be liable to pay personal income taxes in Nepal in respect of their salaries and wages, as are chargeable under the laws and regulations for the time being in force, and the Contractor shall perform such duties in regard to such deductions as may be imposed on him by such laws and regulations. 84.2 The issue of the Final Account Certificate pursuant to clause GCC 70 shall be made only upon submittal by the Contractor of a certificate of income tax clearance from the Government of Nepal.
85. Duties, Taxes and Royalties	85.1 Any element of royalty, duty or tax in the price of any goods including fuel oil, and lubricating oil, cement, timber, iron and iron goods locally procured by the Contractor for the works shall be included in the Contract rates and prices and no reimbursement or payment in that respect shall be made to the Contractor. 85.2 The Contractor shall familiarize himself with GON the rules and regulations with regard to customs, duties, taxes, clearing of goods and equipment, immigration and the like, and it will be necessary for him to follow the required procedures regardless of the assistance as may be provided by the Employer wherever possible. 85.3 The Contractor shall pay and shall not be entitled to the reimbursement of cost of extracting construction materials such as sand, stone/boulder, gravel, etc. from the river beds or quarries. Such prices will be levied by the local District Development Committee (DDC) as may be in force at the time. The Contractor, sub-contractor(s) employed directly by him and for whom he is responsible, will not be exempted from payment of royalties, taxes or other kinds of surcharges on these construction materials so extracted and paid for to the DDC.
86. Member of Government, etc, not Personally Liable	86.1 No member or officer of GoN or the Employer or the Project Manager or any of their respective employees shall be in any way personally bound or liable for the act or obligations of the Employer under the Contract or answerable for any default or omission in the observance or performance of any of act, matter or thing which are herein contained.
87. Approval of Use of Explosives	87.1 No explosives of any kind shall be used by the Contractor without the prior consent of the Employer in writing and the Contractor shall provide, store and handle these and all other items of every kind whatsoever required for blasting operations, all at his own expense in a manner approved in writing by the Employer.
88 Compliance with Regulations for Explosives	88.1 The Contractor shall comply with all relevant ordinances, instructions and regulations which the Government, or other person or persons having due authority, may issue from time to time regarding the handling, transportation, storage and use of explosives.
89. Permission for Blasting	89.1 The Contractor shall at all times maintain full liaison with and inform well in advance, and obtain such permission as is required from all Government authorities, public bodies and private parties whatsoever concerned or affected, or likely to be concerned or affected by blasting operation.
90.Records of Explosives	90.1 Before the beginning of the Defects Liability Period, the Contractor shall account to the satisfaction of the Project Manager for all explosives brought on to the Site during the execution of the Contract and the Contractor shall remove all unused explosives from the Site on completion of works when ordered by the Project

	Manager.
91. Traffic Diversion	91.1 The Contractor shall include the necessary safety procedures regarding and pedestrian traffic diversion that is needed in execution of the works. The Contractor shall include in his costing of works, any temporary works or diversion that are needed during the construction period. All traffic diversion should be designed for the safety of both the motoring public and the men at work. It shall ensure the uninterrupted flow of traffic and minimum inconvenience to the public during the period concerned. As such, adequate warning signs, flagmen and other relevant safety precautionary measures shall be provided to warn motorists and pedestrians well ahead of the intended diversion as directed by the Project Manager. All traffic devices used shall be designed in accordance with the instruction of Project Manager.

Section VIII. Special Conditions of Contract (SCC)

The following Special Conditions of Contract (SCC) shall supplement the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

A. General	
GCC 1.1 (q)	The Employer is Water Supply And Sanitation Division No. 4, Ramechhap
GCC 1.1 (v)	The Intended Completion Date for the whole of the Works shall be 2082-09-30
GCC 1.1 (bb) & 10.1	The Project Manager is engineer The Project Manager and Engineer are synonyms
GCC 1.1 (ee)	The Site is located at engineer and is defined in drawings No. NA
GCC 1.1 (hh)	The Start Date shall be 09-06-2025
GCC 1.1 (ll)	The Works consist of intake,pump house, casing well,intake, laying & jointing of hdpe pipe
GCC 2.2	Sectional Completions are: not applicable
GCC 2.3(i)	The following documents also form part of the Contract: NA
GCC 3.1	The language of the contract is ENGLISH/NEPALI The law that applies to the Contract is the law of NEPAL
GCC 11.1	The Project Manager may delegate any of his duties and responsibilities.
GCC 14.1	Schedule of other contractors: NA

GCC 19.1	The minimum insurance amounts and deductibles shall be: 1. The minimum cover for loss of or damage to the Works, Plant and Materials is: 115% of the Contract Amount. 2. The maximum deductible for insurance of the Works and of Plant and Materials is: 1% of sum insured 3. The minimum cover for loss or damage to Equipment is : 100% 4. The maximum deductible for insurance of Equipment is: 1% of sum insured 5. The minimum for insurance of other property is: 100 % with unlimited number of occurrences 6. The maximum deductible for insurance of other property is: 1% of sum insured 7. The minimum cover for personal injury or death insurance i. for the Contractor's employees is that specified in the Labor act of Nepal and ii. for other people is :[insert amount] with an unlimited number of occurrences
GCC 20.1	Site Investigation Reports are: NA
GCC 23.1	The following shall be designed by the Contractor: NA
GCC 26.1	The Site Possession Date(s) shall be: after aggrement
GCC 30.1	The place of arbitration shall be: NPECA , lalitpur
B. Time Control	
GCC 34.1	The Contractor shall submit for approval a Program for the Works within 365days from the date of the Letter of Acceptance.
GCC 34.3	The period between Program updates is NA days The amount to be withheld for late submission of an updated Program is NA NPR.
C. Quality Control	
GCC 42.1	The Defects Liability Period is 365 days.
D. Cost Control	
GCC 49.1	Prevailing Interest Rate 10NA %
GCC 53.1	The Contract is not subject to price adjustment.

GCC 53.6

Base Price of Construction Materials applicable for price adjustment shall be as per the Table of Adjustment Data submitted by Bidder together with the Letter of Price Bid which is approved by the Project manager.

Bidder should not propose Base Price and Source

Base Price of Construction Materials applicable for price adjustment shall be as per the Table of Adjustment Data submitted by Bidder together with the Letter of Bid which is approved by the Project manager

Sl No.	Construction Material	Unit	Base Price (NRs/Unit) (Ex-factory)	Source (Factory)
1	NA	NA	0.00	0

GCC 53.7

The Price Adjustment amount shall be limited to a maximum 10 % of the initial Contract Amount

GCC 54.1

The proportion of payments retained is: 5 %

GCC 55.1

The liquidated damages for the whole of the Works are .05 % of the final Contract Price per day. The maximum amount of liquidated damages for the whole of the Works is 10 % of the final Contract Price.

GCC 56.1

The Bonus for the whole of the Works is 0 % per day.
The maximum amount of Bonus for the whole of the Works is 0 % of the Contract Price.

GCC 57.1

The Advance Payments shall be 20.00 % and shall be paid in two equal installments and to the Contractor.

Installment	Percentage	Requirement
first installement	10.0	APG ,after aggrement
second installement	10.0	APG,after work possesion

GCC 57.3

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 40% 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.

GCC 58.1

The Performance Security amount is 5% %

E. Finishing the Contract	
GCC 71.1	The date by which operating and maintenance manuals are required is NA
GCC 71.2	The date by which “as built” drawings are required is complet The amount to be withheld for failing to produce "as built" drawings and/or Operating and maintenance manuals is 20000
GCC 72.3 (i)	The maximum number of days is 200 days
GCC 80	The Project Manager has to obtain the specific approval of the Employer for taking any of the following actions : a. Approving subcontracting of any part of the works under General Conditions of Contract Clause 13; b. Certifying additional costs determined under General Conditions of Contract Clause 50; c. Determining start date under General Conditions of Contract Clause 1; d. Determining the extension of the intended Completion Date under General Conditions of Contract Clause 35; e. Issuing a Variation under General Conditions of Contract Clause 1 and 46, except in an emergency situation, as reasonably determined by the Project Manager; emergency situation may be defined as the situation when protective measures must be taken for the safety of life or of the works or of adjoining property. f. Adjustment of rates under General Conditions of Contract Clause 45;

Section IX: 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.

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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 Intent

[on letterhead paper of the Employer]

Date: ... ……

To: .....***Name and address of the Contractor***.....

Subject: …… Issuance of letter of intent to award the contract.....

This is to notify you that, it is our intention to award the contract ..…… ***[insert date]*** .....for execution of the ....…….***[insert name of the contract and identification number, as given in the Contract Data/SCC]*** to you as your bid price ..... ***[insert amount in figures and words in Nepalese Rupees]*** as corrected and modified in accordance with the Instructions to Bidders is hereby selected as substantially responsive lowest evaluated bid.

Authorized Signature: ……

Name: ... ……..

Title: ……..

CC:
[Insert name and address of all other Bidders, who submitted the bid]

[Notes on Letter of Intent
The issuance of Letter of Intent is the information of the selection of the bid of the successful bidder by the Employer and for providing information to other unsuccessful bidders who participated in the bid as regards to the outcome of the procurement process. This standard form of Letter of Intent to Award should be filled in and sent to the successful Bidder only after evaluation and selection of substantially responsible lowest evaluated bid.]

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 Bid dated ……***date*** ……..for execution of the……***name of the contract and identification number, as given in the Contract Data/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 15 days with Performance Security of **NRs**. ……. in accordance with the Conditions of Contract, using for that purpose the Performance security Form included in Section X (Contract Forms) of this Bidding Document.

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 Bid 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. This Agreement shall prevail over all other Contract documents.
   (a) the Letter of Acceptance;
   (b) the Letters of Bid;
   (c) the Addenda Nos ..... **Insert addenda numbers if any** ……
   (d) the Special Conditions of Contract;
   (e) the List of Eligible Countries that was specified in Section V of the bidding document,
   (f) the General Conditions of Contract;
   (g) the Specification;
   (h) the Drawings;
   (i) Bill of Quantities (or Schedules of Prices for lump sum contracts), and
   (j) Table of Price Adjustment Data
   (k)List of Approved Subcontractors
   (l)…… ..**[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, DateList of Approved Subcontractors

In accordance with GCC Sub-Clause 13.1,The following Subcontractors are approved for carrying out the work as specified below.

Name of Subcontractors	Description of Works	Value/Percentage of subcontract

Performance Security

(On letterhead paper of the Commercial Bank or 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

(On letterhead paper of the Commercial Bank or 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".