BIDDING DOCUMENT

for

THE PROCUREMENT OF

Construction of CSEB Bricks Guard Houses at Chitlang, Thaha Municipality Ward 9, Makwanpur District

IFB No. MBUST/W/NCB-01/2079/80

National Competitive Bidding (NCB)

Single-Stage: Two-Envelope Bidding Procedure

Madan Bhandari University of Science and Technology

Setopati, Sainbu, Lalitpur Metropolitan City Ward 18

Issued on: 17 October 2022

Invitation for Bids No.: NCB -1 2079/80

NCB No.:1

Contract Identification No.: MBUST/W/NCB-01/2079/80

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

EQC ... . Evaluation and Qualification Criteria

EXP ... . Experience

FIN .... Financial

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

LIT ... . Litigation

NCB ..... . National Competitive Bidding

PAN ... . Permanent Account Number

PPA ... . Public Procurement Act

PPMO ..... . Public Procurement Monitoring Office

PPR ... . Public Procurement Regulations

PL ... .Profit & Loss

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

Madan Bhandari University of Science and Technology
Setopati, Sainbu, Lalitpur Metropolitan City Ward 18, Nepal
Invitation for Bids for the Construction of CSEB Bricks Guard Houses at Chitlang
Contract Identification IFB No.: MBUST/W/NCB-01/2079/80
First Date of publication: October 17, 2022, Monday (Ashoj 31, 2079)

1. Madan Bhandari University of Science and Technology (MBUST) has received a grant from GoN towards the cost for the Guard house using CSEB Bricks at Chitlang, Thaha Municipality, Ward No. 9, Makawanpur District, Bagmati Province and intends to apply part of the funds to cover eligible payments under the Contract for the Construction of the Graduate Program Building IV. Bidding is open to all eligible bidders as per Section V of the bidding document.
2. MBUST invites electronic bids from eligible bidders for the construction of the Guard Houses under the National Competitive Bidding – Single Stage Two Envelope Bidding procedures.

   Only eligible bidders with the following specific construction experience should participate in this bidding:

   a) Minimum Average Annual Construction Turnover of the best 3 years within the last 10 years: ***NRs. 29 Million excluding VAT.***

   b) Participation as Prime contractor, management contractor, or subcontractor, in at least One (1) Contract for CSEB bricks used Building within the last ten (10) years, with a value of at least NRs 8 Million excluding VAT that has been successfully or are substantially completed and that are similar to the proposed works.

   c) Participation as Prime contractor in at least one (1) CSEB Bricks frame structure building contracts completed prior to the applications submission deadline within the last ten (10) years, with a CSEB bricks works of at least 115 m3 .

3. Under the Single Stage, Two Envelope Procedure, Bidders are required to submit simultaneously two separate sealed envelopes, one containing (i) the Technical Bid and the other (ii) the Price Bid, both in turn enclosed in one sealed envelope as per the provision of ITB 21 of the Bidding Document.
4. Eligible Bidders may obtain further information and inspect the Bidding Documents at the office of MBUST, Telephone no. 9840088016 and 9849848053, email: info@mbustb.edu.np or may visit PPMO e-GP system www.bolpatra.gov.np/egp and www.mbustb.org.
5. A complete set of Bidding Documents may be downloaded from PPMO's e-GP system www.bolpatra.gov.np/egp. Bidders, submitting their bids electronically, should deposit the non-refundable cost of bidding document NRs. 20,000.00 in the account as specified below

   Name of the Bank: Nepal Bank Limited, Gabahal, Lalitpur.
   Name of Office: Madan Bhandari University of Science and Technology Development Board
   Office Account no.: 01800106701870000001

6. Pre-bid meeting shall be held at the office of MBUSTDB at 12:00 hours, November 7, 2022.
7. Electronic bids must be submitted to the office Madan Bhandari University of Science and Technology through PPMO's e-GP system www.bolpatra.gov.np/egp on or before 13:00 hours on November 18 2022 (2 Mansir 2079),. Bids received after this deadline will be rejected.
8. The bids will be opened in the presence of Bidders' representatives who choose to attend at 14:00 hours on November 18 2022 (2 Mansir 2079), at the office of MBUST. Bids must be valid for a period of 120 (one hundred twenty) ***days (19 March 2023) after*** bid opening and must be accompanied by a scanned copy of the bid security in pdf format amounting to a minimum of **NRs. 7 Million .** which shall be valid for 30 days beyond the validity period of the bid **(i.e. 19 March 2023)**

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 a 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: Instructions 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 VI (Works Requirements). The ***name, identification, and number*** of lots (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 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 mis representation, 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. **(e) if the bidder fails to inform about the saturation of maximum number of contracts as per ITB 4.10.**
	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, may 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.

	3.6Furthermore, 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** 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 an eligible country, in accordance with Section V (Eligible Countries). 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. A Bidder may be considered to be in a conflict of interest with one or more parties in this bidding process, if any of, including but not limited to, the following apply: (a) they have controlling shareholders in common; or (b) they receive or have received any direct or indirect subsidy from any of them; or (c) they have the same legal representative for purposes of this bid; or (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to material information about or improperly influence the Bid of another Bidder, or influence the decisions of the 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. **(h) a Bidder that has a close business or family relationship with a professional staff of the Procuring Entity.**

	4.4 A firm that is under a declaration of ineligibility by the GoN 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. Where Nepal prohibits payments to a particular firm or for particular goods by such an act of compliance, that firm may be excluded; (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 sanctioned or temporarily suspended 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 In case a prequalification process has been conducted prior to the bidding process, this bidding is open only to prequalified Bidders.
	4.9 Maximum number of ~~**bidding process**~~ **running contracts** that a Bidder, and all parties constituting the Bidder can **have in hand** ~~**participate**~~ shall be as specified in BDS. The bidders shall be considered ineligible if number of **running contracts** ~~**participation in bidding process**~~ exceeds the number as specified.
	4.10 For the purpose of ITB 4.9 above, the bidder shall declare that the bidder, and all parties constituting the Bidder have not running contracts in hand more than the number as specified in BDS. If the bidder, and all parties constituting the Bidder has participated in bidding processes of many public entities and during that period the maximum number of contracts as specified saturates due to issuance of letters of acceptance by a particular public entity, the bidder shall inform in written to all other concerned public entities, where the bidder have participated in bidding process, within three days of issuance of last letter of acceptance that saturates the maximum number of contracts 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 accordance with Section V (Eligible Countries) 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 Qualification Criteria (EQC) Section IV Bidding Forms (BDF) Section V Eligible Countries PART II Requirements Section VI Works Requirements (WRQ) Section VII Bill of Quantities (BOQ) PART III Conditions of Contract and Contract Forms Section VIII General Conditions of Contract (GCC) Section IX Special Conditions of Contract (SCC) Section X 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 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 a 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 22.2.
	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, 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 22.2. **However, the time available to submit bids shall not be less than five days since amendment in bidding document.**

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 two envelopes submitted simultaneously, one called the Technical Bid containing the documents listed in ITB 11.2 and the other the Price Bid containing the documents listed in ITB 11.3, both envelopes enclosed together in an outer single envelope. 11.2 The Technical Bid shall comprise the following: (a) Letter of Technical Bid; (b) Bid Security in accordance with ITB 19; (c) alternative Technical Bid, at Bidder's option and if permissible, in accordance with ITB 13; (d) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2; (e) documentary evidence in accordance with ITB 17, establishing the Bidder's qualifications to perform the contract; (f) Technical Proposal in accordance with ITB 16; (g) 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**. 11.3 The Price Bid shall comprise the following: (a) Letter of Price Bid; (b) completed Bill of Quantities(BoQ), in accordance with ITB 12 and ITB 14, or as stipulated in the BDS; (c) alternative price Bids, at Bidder's option and if permissible, in accordance with ITB 13;

	(d) Any other document required in the **BDS**.
	11.4 The Bidder is solely responsible for the authenticity of the submitted documents.
12. Letter of Bid and Schedules	12.1 The Letters of Technical Bid and Price Bid, Schedules, and all documents listed under ITB 11, shall be prepared using the relevant forms in Section IV (Bidding Forms) and in Section VII (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. Alternative Bids	13.1 Unless otherwise **specified in the BDS**, alternative bids shall not be considered.
	13.2 When alternative times for completion are explicitly invited, a statement to that effect will be **included in the BDS**, as will the method of evaluating different times for completion.
	13.3 When specified in the BDS pursuant to ITB 13.1, and subject to ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Document must first price the Employer's design as described in the Bidding Document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.
	13.4 When **specified in the BDS**, Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be **identified in the BDS** and described in Section VI (Works Requirements). The method for their evaluation will be stipulated in Section III (Evaluation and Qualification Criteria).
14. Bid Prices and Discounts	14.1 The prices and discounts quoted by the Bidder in the Letter of Price Bid and in the Schedules shall conform to the requirements specified below.
	14.2 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 VII (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.
	14.3 The price to be quoted in the Letter of Price Bid shall be the total price of the Bid, excluding any discounts offered. Absence of the total price in the Letter of Price Bid or the Bid Price in the Bill of Quantities shall result in rejection of the Bid.
	14.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Price Bid, in accordance with ITB 12.1.
	14.5 If so indicated in ITB 1.1 **and ITB 35.4**, 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 14.4, provided the Bids for all Contracts are submitted and opened at the same time.
	14.6 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.
	14.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 30 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total bid price submitted by the Bidder.
15. Currency of Bid and Payment	15.1 The currency of the bid and payment shall be in Nepalese Rupees.
16. Documents Comprising the Technical Proposal	16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV (Bidding Forms), in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.
17. Documents Establishing the Qualifications of the Bidder	17.1 To establish its qualifications to perform the Contract in accordance with Section III (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in Section IV (Bidding Forms).
18. Period of Validity of Bids	18.1 Bids shall remain valid for the period **specified in the BDS** after the bid submission deadline date prescribed by the Employer. **If the prescribed bid submission deadline date falls on a government holiday, then the next working day shall be considered as the bid submission deadline date. In such case the validity period of the bids shall be considered from the original bid submission deadline date.** A bid valid for a shorter period shall be rejected by the Employer as nonresponsive.
	18.2 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 19, 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.
19. Bid Security	19.1 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.
	19.2 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 18.2.
	19.3 The bid security issued by any foreign Bank outside Nepal must be counter guaranteed by Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.
	19.4 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.
	19.5 The bid security of unsuccessful Bidders shall be returned within three days, once the successful Bidder's furnishing of the required performance security and signing of the Contract Agreement pursuant to ITB 40.1 and 41.1
	19.6 The bid security shall be forfeited if: GoN funded : (a) a Bidder requests for withdrawal or modification of its bid, except as provided in ITB 18.2: (i) during the period of bid validity specified by the Bidder on the Letter of Technical Bid and Price 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 Technical Bid and Price Bid, in case of hard copy submission. (b)a Bidder changes the prices or substance of the bid while providing information pursuant to clause 27.1; (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 40.1; (ii) sign the Contract in accordance with ITB 41.1; or (iii) accept the correction of arithmetical errors pursuant to clause 33.1

	DP funded: The bid security shall be forfeited (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid, except as provided in ITB 18.2; or (b) if the successful Bidder fails to (i) furnish a performance security in accordance with ITB 40.1; or (ii) sign the Contract in accordance with ITB 41.1; (iii) accept arithmetical corrections in accordance with ITB 33.1;
	19.7 The Bid Security of a Joint Venture shall be in the name of the Joint Venture that submits the bid. If the Joint Venture 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.
20. Format and Signing of Bid	20.1 The Bidder shall prepare one original set of the Technical Bid and one original of the Price Bid comprising the Bid as described in ITB 11 and clearly mark it **"ORIGINAL – TECHNICAL BID"** and **"ORIGINAL – PRICE BID**." Alternative bids, if permitted in accordance with ITB 13, shall be clearly marked **"ALTERNATIVE".** 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 21.1(b).
	20.2 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.
	20.3 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	
21. Sealing and Marking of Bids	21.1 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 shall enclose the original of the Technical Bid, and the original of the Price Bid and each copy of the Technical Bid and Price Bid, including alternative bids, if permitted in accordance with ITB 13, in separate sealed envelopes,

duly marking the envelopes as **"ORIGINAL TECHNICAL BID", "ORIGINAL – PRICE BID", "ALTERNATIVE" and "COPY No. – TECHNICAL BID" and "COPY NO. PRICE BID"** These envelopes containing the original and the copies shall then be enclosed in one single envelope.

(b) Bidders submitting Bids electronically shall follow the electronic bid submission procedure specified in this clause.

i. The bidder is required to register in the e-GP system https://www.bolpatra.gov.np/egp following the procedure specified in e-GP guideline.
ii. Interested bidders may either purchase the bidding document from the Employer's office as specified in the Invitation for Bid (IFB) or bidders may download the IFB and bidding document from e-GP system.
iii. The registered bidders need to maintain their profile data required during preparation of bids.
iv. In order to submit their bids the cost of the bidding document can be deposited as specified in IFB. In addition, electronic scanned copy (.pdf format) of the bank deposit voucher/cash receipt should also be submitted along with the technical bid.
v. The bidder can prepare their technical and price bids using data and documents maintained in bidder's profile and forms/format provided in bidding document by Employer. The bidder may submit bids as a single entity or as a joint venture. The bidder submitting bid in joint venture 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) should update their profile data and documents required during preparation and submission of their technical 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.

The required forms and documents shall be part of technical bids.

No.	Document	Requirement	Remarks
1.	Letter of Technical Bid	Mandatory	PDF
2.	Bid Security/Bank Guarantee	Mandatory	PDF
3.	Company registration Certificate	Mandatory	PDF
4.	VAT registration Certificate	Mandatory (for domestic bidders only)	PDF
5.	Business Registration Certificate	Mandatory	PDF
6.	Tax Clearance Certificate/Tax return submission evidence/evidence of time extension	Mandatory (for domestic bidders only)	PDF
7.	Power of Attorney of Bid signatory	Mandatory	PDF

8.	Bank Voucher for cost of bid document	Mandatory	PDF
9.	Joint venture agreement	Mandatory in case of JV Bids Only	PDF
10.	Qualification Documents	Mandatory	Using profile data(financial details, contract details etc.) and Technical Proposal
11.	Additional documents] specified in ITB 11.2 (h)	**Mandatory (If any)**	PDF

The required forms and documents shall be part of price bids.

No.	Document	Requirement	Remarks
1.	Letter of Price Bid	Mandatory	PDF
2.	Completed Bill of Quantities (BoQ)	Mandatory	Online Forms
3.	Price Adjustment Table	**Mandatory (If applicable)**	Online Forms
4.	Additional Documents specified in ITB 11.3 (d)	**Mandatory (If any)**	PDF

Note:

a) ***The documents specified as "Mandatory" should be included in e-submission and non-submission of the documents shall be considered as non-responsive bid.***

b) *Bidders (all partners in case of JV) should verify/update their profile documents as appropriate for the specific bid before submitting their bid electronically.*

viii. After providing all the details and documents, two separate bid response documents i.e technical bids and price bids will be generated from the system. Bidders are advised to download and verify the response documents prior to bid submission.

ix. 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 allow bidder to submit their bid.

x. Electronically submitted bids can be modified and/or withdrawn through system. The bidder may modify their bids multiple times online within bid submission date and time specified in e-GP system. Once a Bid is withdrawn, bidder won't be able to submit another bid response for the same bid.

xi. 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 facility for submission of bid electronically through e-submission is to promote transparency, non-discrimination, equality of access, and open competition in the bidding process. The Bidders are fully responsible to use the e- submission facility properly in e-GP system as per specified procedures and in no case the Employer shall be held liable for Bidder's inability to use this facility.

	cc) When a bidder submits electronic bid through the PPMO e-GP portal, it is assumed that the bidder has prepared the bid by studying and examining the complete set of the Bidding documents including specifications, drawings and conditions of contract. 21.2. 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 22.1; (cc) bear the specific identification of this bidding process indicated in BDS 1.1; and 21.3 The outer envelope and the inner envelope containing Technical Proposal shall bear a warning not to open before the time and date for the opening of Technical Bid in accordance with ITB 25.1. 21.4 The inner envelope containing the Price Bid shall bear a warning not to open until advised by the Employer in accordance with ITB 25.7 21.5 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.
22. Deadline for Submission of Bids	22.1 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 Nepal 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.
	22.2 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.
23. Late Bids	23.1 The Employer shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 22. Any bid received by the Employer after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder.
24. Withdrawal, and Modification of Bids	24.1 A Bidder may withdraw, or modify its bid- Technical or Price - after it has been submitted either in hard copy or by e-submission. Once a Bid is withdrawn, bidder shall not be able to submit another bid for this bidding process. Procedures for withdrawal or modification of submitted bids are as follows: (i) Bids submitted in Hard Copy GoN Funded: 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 20.2. The corresponding modification of the bid must accompany the respective written notice. All notices must be: (aa)prepared and submitted in accordance with ITB 20 and ITB 21,and in addition, the respective envelopes shall be clearly marked "**WITHDRAWAL", "MODIFICATION;"** and (bb) received by the Employer twenty four hour prior to the deadline prescribed for submission of bids, in accordance with ITB 22.

	DP Funded: A Bidder may withdraw or modify its Bid – Technical or Price – after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 20.2, (except that withdrawal notices do not require copies). The corresponding modification of the Bid must accompany the respective written notice. All notices must be i) prepared and submitted in accordance with ITB 20 and ITB 21 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL," and "MODIFICATION;" and ii) received by the Employer prior to the deadline prescribed for submission of Bids, in accordance with ITB 22. 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.
	24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall not be opened. In case of hard copy submission, the Bid will be returned unopened to the Bidders.
	24.3 The following provisions apply for withdrawal or modification of the Bids: GoN Funded: (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 Technical Bid and Price Bid or any extension thereof. DP Funded: No Bid may be withdrawn or modified in the interval between the deadline for submission of Bids and the expiration of the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid or any extension thereof.
	24.4 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. 24.5 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.
	24.6 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.
25. Bid Opening	25.1 The Employer shall open the Technical Bids in public at the address, on the date and time **specified in the BDS** in the presence of Bidders` designated

	representatives who choose to attend. The Price Bids will remain unopened and will be held in custody of the Employer until the specified time of their opening. If the Technical Bid and Price Bid are submitted together in one envelope, the Employer shall reject the entire Bid.
	25.2 The Employer shall download the e-submitted Technical Bid. The e-GP system allows the Employer to download the e-submitted technical bid only after bid opening date and time after login simultaneously by at least two members of the Bid Opening Committee.
	25.3 Electronically submitted Technical 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 technical bids must be readable through open standards interfaces. Unreadable and or partially submitted bid files shall be considered incomplete.
	25.4 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 Technical Bid and/or Price Bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out and recorded at bid opening. Only the Technical Bid, both Original as well as Modification, are to be opened, read out, and recorded at the opening. Price Bids, both Original and Modification, will remain unopened in accordance with ITB 25.1.
	25.5 All other envelopes holding the Technical Bid shall be opened one at a time, reading out: the name of the Bidder; whether there is a modification; the presence of a bid security and any other details as the Employer may consider appropriate. Only Technical Bids read out and recorded at bid opening shall be considered for evaluation. No bid shall be rejected at opening of Technical Bids except for late bids, in accordance with ITB 23.1.
	25.6The Employer shall prepare a record of the opening of Technical Bids that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, or modification; 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.
	25.7 At the end of the evaluation of the Technical Bids, the Employer will invite bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award to attend the opening of the Price Bids. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer. Bidders shall be given at least 7 days' notice for the opening of Price Bids.

	25.8 The Employer will notify Bidders in writing who have been rejected on the grounds of their Technical Bids being substantially nonresponsive to the requirements of the Bidding Document and return their Price Bids unopened.
	25.9 The Employer shall conduct the opening of Price Bids of all Bidders who submitted substantially responsive Technical Bids, in the presence of Bidders` representatives who choose to attend at the address, on the date, and time specified by the Employer. The Bidder's representatives who are present shall be requested to sign a register evidencing their attendance.
	25.10 All envelopes containing Price Bids shall be opened one at a time and the following read out and recorded: (a) the name of the Bidder; (b) whether there is a modification; (c) the Bid Prices, including any discounts and alternative offers; and (d) any other details as the Employer may consider appropriate. Only Price Bids, discounts, modifications, and alternative offers read out and recorded during the opening of Price Bids shall be considered for evaluation. No Bid shall be rejected at the opening of Price Bids.
	25.11 The Employer shall prepare a record of the opening of Price Bids that shall include, as a minimum, the name of the Bidder, the Bid Price (per lot if applicable), any discounts, modifications and alternative offers. 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	
26. Confidentiality	26.1 Information relating to the examination, evaluation, comparison, and post-qualification of bids 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.
	26.2 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.
	26.3 Notwithstanding ITB 26.2, 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.
27. Clarification of Bids	27.1 To assist in the examination, evaluation, and comparison of the Technical and Price 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 substance of the Technical Bid or prices in the Price Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the

	evaluation of the Price Bids, in accordance with ITB 33. In case of e-submission of bid, upon notification from the employer, the bidder shall also submit the original of documents comprising the Technical and Price Bid as per ITB 11.2 and ITB 11.3 for verification of submitted documents for acceptance of the e-submitted bid.
	27.2 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.
28. Deviations, Reservations, and Omissions	28.1 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.
29. Examination of Technical Bid	29.1The Employer shall examine the Technical Bid to confirm that all documents and technical documentation requested in ITB 11.2 have been submitted. **If any of these documents or information (except alternative Technical Bid which is optional) is missing, the bid shall be rejected.**
	29.2 In case of e-submission bids, the Employer shall confirm that all the documents and information requested in ITB 21.1 have been submitted. If any of these documents or information is missing, the bid shall be rejected.
30. Determination of Responsiveness of Technical Bid	30.1 The Employer's determination of a Bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.2.
	30.2 A substantially responsive Technical 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.
	30.3 The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section VI (Works Requirements) have been met without any material deviation, reservation or omission.

	30.4 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.
	30.5 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 27.1, the bid shall not be considered for further evaluation.
	30.6 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. 30.7Except in case of e-submission, the Financial Bid of the bidder, which is evaluated as substantially non-responsive in technical bid, shall be returned to the respective bidders.
31.NonconformitiesErrors, and Omissions	31.1 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.
	31.2 Provided that a Technical 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 Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the Price Bid. Failure of the Bidder to comply with the request may result in the rejection of its bid.
	31.3 Provided that a Technical 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 Qualification Criteria).
	31.4 If the monetary value of such non-conformities is found to be more than fifteen percent of the Bid Price of the bidder pursuant to ITB **31.3**, such bid shall be considered nonresponsive and shall not be involved in evaluation.
32 Qualification of the Bidder	32.1 The Employer shall determine to its satisfaction during the evaluation of Technical Bids whether Bidders meet the qualifying criteria specified in Section III (Evaluation and Qualification Criteria).
	32.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.1.

	32.3 An affirmative determination shall be a prerequisite for the opening and evaluation of a Bidder's Price Bid. A negative determination shall result into the disqualification of the Bid, in which event the Employer shall return the unopened Price Bid to the Bidder.
33. Correction of Arithmetical Errors	33.1 During the evaluation of Price Bids, 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; (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 Price Bid, the bid price in the Summary of Bill of Quantities will prevail and the bid amount in item (c) of the Letter of Price 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.
	33.2 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.
34 Subcontractors	34.1 In case of Prequalification, the Bidder's Bid shall name the same subcontractor as submitted in the prequalification application and approved by the Employer. In case of Post-qualification, the Employer may permit subcontracting for certain specialized works as indicated in Section III When subcontracting is permitted by the Employer, the sub-contractor shall meet the qualifications criteria as indicated in section III. Sub-contractors' qualification and experience will not be considered for evaluation of the Bidder. The Bidder on its own (without taking into account the qualification and experience of the sub-contractor) should meet the qualification criteria. Bidders may propose subcontracting up to the percentage of total value of contracts or the volume of works as **specified in the BDS.**
35. Evaluation of Price Bids	35.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.
	35.2 To evaluate a Price 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 33.1; (c) price adjustment due to discounts offered in accordance with ITB 14.4; (d) adjustment for nonconformities in accordance with ITB 31.3; (e) application of all the evaluation factors indicated in Section III (Evaluation and Qualification Criteria);
	35.3 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.
	35.4 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 Price Bid, is specified in Section III (Evaluation and Qualification Criteria).
	35.5 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**.
	35.6 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 27.1, the bid shall not be considered for further evaluation.
	35.7 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.
36. Comparison of Bids	36.1 The Employer shall compare all substantially responsive bids in accordance with ITB 35.2 to determine the lowest evaluated bid.

37. Employer's Right to Accept Any Bid, and to Reject Any or All Bids	37.1 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	
38. Award Criteria	38.1 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.
39. Letter of Intent to Award the Contract/Notification of Award	39.1 The Employer shall notify the concerned Bidder whose bid has been selected in accordance with ITB 38.1 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.
	39.2 After issuance of the notice under ITB 39.1 if the concerned bidder provides information pursuant to ITB 4.10 regarding saturation of maximum number of contracts, the employer shall disqualify the bidder and shall select the next lowest evaluated Bidder in accordance with ITB 38.1 and notify accordingly as per ITB 39.1.
	39.3 If no bidder submits an application pursuant to ITB 42 within a period of seven days of the notice provided under ITB 39.1, the Employer shall, accept the bid selected in accordance with ITB 38.1 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.
	39.4 After communicating letter of acceptance under ITB 39.3, if the concerned bidder provides information pursuant to ITB 4.10 regarding saturation of maximum number of contracts, the employer shall reject the bid of that bidder and shall select the next lowest evaluated Bidder in accordance with ITB 38.1 and shall issue the notice accordingly as per ITB 39.1. In such case bid security of the rejected bidder shall not be forfeited.
	39.5 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.
40. Performance Security and Line of Credit	40.1 Within Fifteen (15) days of the receipt of Letter of Acceptance from the Employer, the successful Bidder shall furnish the performance security in accordance with the Conditions of Contract, subject to ITB 35.5, as specified below from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal using Sample Form for the Performance Security included in Section X (Contract Forms), or another form acceptable to the Employer. The

	performance security issued by any foreign Bank outside Nepal must be counter guaranteed by Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal. 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 **exclusive** of Value Added Tax.
	40.2 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 39.
41 Signing of Contract	41.1 The Employer and the successful Bidder shall sign the Contract Agreement within the period as stated ITB 40.1.
	41.2 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 (viii) contract price
	41.3 Within thirty (30) days from the date of issuance of notification pursuant to ITB 39.1 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.
	41.4 If the bidder whose bid has been accepted fails to sign the contract as stated ITB 40.1, the Public Procurement Monitoring Office shall blacklist the bidder on recommendation of the Public Entity.
42. Complaint and Review	42.1 If a Bidder is dissatisfied with the Procurement proceedings or the decision made by the Employer in opening of the price bid or 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 25.8 and ITB 39.1 by the Public Entity, for review

	of the proceedings stating the factual and legal grounds.
	42.2 Late application filed after the deadline pursuant to ITB 42.1 shall not be processed.
	42.3 The chief of Public Entity shall, within five (5) days after receiving the application, give its decision with reasons, in writing pursuant to ITB 42.1: (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 for the Bid amount up to the value as stated in 42.4.
	42.4 If the Bidder is not satisfied with the decision of the Public Entity in accordance with ITB 42.3, is not given within five (5) days of receipt of application pursuant to ITB 42.1, it can, within seven (7) days of receipt of such decision, file an application to the Review Committee of the GoN, stating the reason of its disagreement on the decision of the chief of Public Entity and furnishing the relevant documents, provided that its Bid amount ,equal or more than Rupees Twenty Million (NRs. 20,000,000). The application may be sent by hand, by post, by courier, or by electronic media at the risk of the Bidder itself.
	42.5 Late application filed after the deadline pursuant to ITB 42.4 shall not be processed.
	42.6 Within three (3) days of the receipt of application from the Bidder, pursuant to ITB 42.4, the Review Committee shall notify the concerning Public Entity to furnish its procurement proceedings, pursuant to ITB 42.3.
	42.7 Within three (3) days of receipt of the notification pursuant to ITB 42.6, the Public Entity shall furnish the copy of the related documents to the Review Committee.
	42.8 The Review Committee, after inquiring from the Bidder and the Public Entity, if needed, shall give its decision within one (1) month of the receipt of the application filed by the Bidder, pursuant to ITB 42.4.
	42.9 The Bidder, filing application pursuant to ITB 42.4, shall have to furnish a cash amount or Bank guarantee from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law equivalent to **ten percent (10 %) of amount of bid security in case of complaint against decision pursuant to ITB 25.8 and** one percent (1%) of its quoted Bid amount **in case of complaint against decision pursuant to ITB 39.1** with the validity period of at least ninety (90) days from the date of the filing of application pursuant to ITB 42.4.
	42.10 If the claim made by the Bidder pursuant to ITB 42.4 is justified, the Review Committee shall have to return the security deposit to the applicant, pursuant to ITB 42.9, within seven (7) days of such decision made.

Section II: Bid Data Sheet

This section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section I. Instructions to Bidders.

A. General		
ITB 1.1	The number of the Invitation for Bids is: ***MBUST/W/NCB-01/2079/80***	
ITB 1.1	The Employer is***: Madan Bhandari University of Science and Technology***	
ITB 1.1	The number and identification of lots (contracts) comprising this bidding process is: : ***MBUST/W/NCB-01/2079/80***	
ITB 2.1	The name of the Project is***…Construction of CSEB Guard Houses.*** The DP is ***N/A*** The implementing agency is ***Madan Bhandari University of Science and Technology*** GoN Funded or DP Funded: ***……. GoN Funded***	
ITB 4.1 (a)	For GoN Funded: Maximum number of partner in a joint venture shall be : **3 (three)**	
ITB 4.4	*For DP:* ***N/A***	
ITB 4.9 **& 4.10**	For GoN Funded: Maximum number of **running contracts** that a Bidder, and all parties constituting the Bidder can **have in hand** shall be : **5 (five)**	
B. Bidding Document		
ITB 7.1	For clarification purposes only, the Employer's address is: Attention **Sr. Er. Bidya Ratna Bajracharya** Address: Sainbu, Lalitpur Metropolitan City, Ward No. 18, Nepal Telephone: : (+977) 9840088016 and 9849848053 Electronic mail address: info@mbustb.edu.np	
ITB 7.4	A Pre-Bid meeting ***[insert "shall" or "shall not"]*** held. ***[If pre-Bid meeting is going to be held, insert the following otherwise delete]*** Pre-Bid Meeting will **Take place at the following date, time and place:** Date: 7 November 2022 Time: 12:00 Noon Place: Madan Bhandari University of Science and Technology, Sainbu, Lalitpur Metropolitan City, Ward No. 18, Nepal 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 11.2 (h)	The Bidder shall submit with its Technical Bid the following additional documents:***[insert if any additional documents required,]***(a)Letter of Technical Bid; (b) Up to date firm/company registration certificate. (c) Business Registration licenses. (d) VAT and PAN registration certificate. (e) TAX clearance certificate up to Fiscal year 2077/78. (f) Self-declaration letter stating the bidder as well as any partner of joint venture has not participated in more than five bidding process since 2078-12-03 i.e. March 17, 2022 and currently ongoing public construction work that has not been substantially completed. (g) Bid Security in accordance with ITB 19; (h) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2; (i) documentary evidence in accordance with ITB 17, establishing the Bidder's qualifications to perform the contract; (j) Technical Proposal in accordance with ITB 16; (k) In the case of a bid submitted by a JV, the JV agreement, or letter of intent to enter into a JV including a draft agreement, indicating at least the parts of the Works to be executed by the respective partners; and (l) Tax clearance certificate and JV agreements for the verification of the turnover of best three years (m) Construction schedule clearly showing start and finish of all the work items in MS Project or Primevera (n) Method statement clearly describing the process of the construction work to be carried out by the contractor. (o) Project organization chart (p) Personnel Mobilization schedule (q) Equipment schedule	
ITB 11.3 (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	
11.3 (d)	The Bidder shall submit with its Price Bid the following additional documents: Letter of price bid in separate envelope and Bill of quantities	
ITB 13.1	Alternative bids ***"shall not be"*** permitted.	
ITB 13.2	Alternative times for completion ***[insert "shall be" or "shall not be"]*** permitted. *If alternative times for completion are permitted, the evaluation method will be as specified in Section III (Evaluation and Qualification Criteria).*	

ITB 13.4	Alternative technical solutions shall be permitted for the following parts of the Works: …… ***[if alternative technical solution is permitted, Insert the part of the work]*** *If alternative technical solutions are permitted, the evaluation method will be as specified in Section III (Evaluation and Qualification Criteria).*	
ITB 14.6	The prices quoted by the Bidder ***shall not be*** subject to adjustment during the performance of the Contract.	
ITB 18.1	The bid validity period shall be**: 120 days**	
ITB 19.1	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 **NPR 500,000** which shall be valid for 30 days beyond the validity period of the bid.	
ITB 19.2 (b)	Bank Name: Nepal Bank Limited Branch Name: Gabahal, Lalitpur. Office Name: Madan Bhandari University of Science and Technology Development Board Account No.: 01800106701870000001	
ITB 20.1	In addition to the original of the bid, the number of copy/ies is/are: ***Not Applicable***	
ITB 20.2	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 21.1	Bidders shall have the option of submitting their bids **by electronic only.**	
ITB 22.1	For bid submission purposes only, the Employer's address is : Attention : Prof. Rajendra Dhoj Joshi, Chairperson, MBUST Address : Sainbu, Lalitpur Metropolitan City, Ward No. 18, Nepal The deadline for bid submission is: Date: November 18, 2022 (Mansir 2, 2079) Time: 13:00 hours	
ITB 25.1	The Technical Bid opening shall take place at: Address: Sainbu, Lalitpur Metropolitan City, Ward No. 18, Nepal Date: November 18, 2022 (Mansir 2, 2079) Time : 14:00 hours	

E. Evaluation and Comparison of Bids		
ITB 34.1	a) Contractor's proposed subcontracting: Maximum percentage of subcontracting permitted is: **25% of the total contract amount.** b) Sub-contractors' qualification and experience will not be considered for evaluation of the Bidder. The Bidder on its own (without taking into account the qualification and experience of the sub-contractor) should meet the qualification criteria.	
ITB 35.4	Bidders are ***[insert "permitted" or "not permitted"]*** to quote separate prices for lots (Contracts), and a single Bidder will be awarded multiple lots (Contracts) based on provision of ***Paragraph 1.2, Multiple Contracts Section III (Evaluation and Qualification Criteria):***	
ITB 35.5	The amount of the performance security be increased by **Eight (8)** percent of the quoted bid price.	
ITB 41.4	For DP Funded: Not Applicable ***[For GoN funded delete this row]***	

Section III: Evaluation and Qualification Criteria

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders by post-qualification exercise. GoN/DP requires bidders to be qualified by meeting predefined, precise minimum requirements. The method sets pass-fail criteria, which, if not met by the bidder, results in disqualification. In accordance with ITB 32 and ITB 35, 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 35.2 (a) - (e) the following criteria shall apply:

Note:
Use the evaluation criteria listed below as appropriate and required for the project.

1.1 Adequacy of Technical Proposal

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity, to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section VI (Works Requirements).

Non-compliance with equipment and personnel requirements described in Section VI (Works Requirements) shall not be grounds for bid rejection and such non-compliance will be subject to clarification and rectification prior to contract award.

1.2 Multiple Contracts

Multiple Contracts, if permitted under ITB 35.4, will be evaluated as follows:

Award Criteria for Multiple Contracts [ITB 35.4]:

Bidders have the option to Bid for any one or more Contracts. Bids will be evaluated taking into account discounts offered, if any, for combined contracts. The contract(s) will be awarded to the Bidder or Bidders offering the lowest evaluated cost to the Employer for combined contracts, subject to the selected Bidder(s) meeting the required qualification criteria for combination of multiple contracts as the case may be.

Qualification Criteria for Multiple Contracts:

The criteria for qualification shall be the sum of the minimum requirements for respective individual contracts as specified under items 2.3.2, 2.3.3 **and** 2.4.2 b,

With respect to the **Contracts of Similar Size and Nature** under item 2.4.2(a) of Section III, the evaluation shall be done as below:

N is the minimum number of contracts required as per Specific Construction Experience (2.4.2(a)).

V is the minimum value of a single contract as per Note (2), (3) or (4) of 2.4.2 Specific Construction Experience.

i. Minimum requirements for combined contract(s) shall be the aggregate requirements for each contract for which the bidder has submitted bids as follows, and N1,N2,N3, etc. shall be different contracts:

Contract 1: N1 contracts, each of minimum value V1;
Contract 2: N2 contracts, each of minimum value V2;
Contract 3: N3 contracts, each of minimum value V3;
----etc.

Or

ii. Total number of contracts is equal or less than N1 + N2 + N3 +--but the total value of all such contracts is equal or more than N1 x V1 + N2 x V2 + N3 x V3 +---.

1.3 In Case, other than Multiple Contracts

Bidders have the option to Bid for any one or more Contracts. The contracts will be awarded to the Bidder or Bidders offering the lowest evaluated cost to the Employer, subject to the selected Bidder(s) meeting the required qualification which shall be the sum of the minimum requirements for respective individual contracts. Under this case, Contract shall be awarded based on Least Cost Combination to the Employer.

1.4 Completion Time

An alternative Completion Time, if permitted under ITB 13.2, will be evaluated as follows:

[insert project specific requirements]

1.5 Alternative Technical Solutions

Alternative technical solutions, if permitted under ITB 13.4, will be evaluated as follows:

[insert project specific requirements]

1.6 Quantifiable Nonconformities and Omissions

Subject to ITB 14.2 and ITB 35.2, the evaluated cost of quantifiable nonconformities including omissions, is determined as follows:

[***Insert in bidding document:*** **"**Pursuant to ITB 31.3, the cost of all quantifiable nonmaterial nonconformities shall be evaluated, but excluding omission of prices in the BoQ.The Employer will make its own assessment of the cost of any nonmaterial nonconformities and omissions for the purpose of ensuring fair comparison of bids."]

2. Qualification

2.1 Eligibility

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
2.1.1 Nationality					
Nationality in accordance with ITB sub-clause 4.2	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Technical Bid Forms ELI –1; ELI –2 with attachments
2.1.2 Conflict of Interest					
No conflicts of interest in accordance with ITB Sub-Clause 4.3.	must meet requirement	existing or intended JV must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
2.1.3 Government/ DP Eligibility					
Not having been declared ineligible by government /DP, as described in ITB Sub-Clause 4.4.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
2.1.4 Government-owned Entity					
Bidder required to meet conditions of ITB Sub-Clause 4.5.	must meet requirement	existing or intended JV must meet requirement	must meet requirement	not applicable	Forms ELI - 1, ELI - 2, with attachments
2.1.5 UN Eligibility					
Not having been declared ineligible based on a United Nations resolution or Employer's country law, as described in ITB Sub-Clause 4.8.	must meet requirement	existing or intended JV must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
2.1.6 Bidder's Running Contracts					
Bidder's**Running**	must meet requirement	existing or intended JV must meet requirement	must meet requirement	not applicable	ELI-3

contracts[2] not more than five (5) as described in ITB Sub-Clause 4.9.					
2.1.7 Other Eligibility					
Firm Registration Certificate	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
Business Registration Certificate	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
VAT and PAN Registration certificate ***(only for domestic bidders)***	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
Tax Clearance Certificate/Tax return submission evidence/evidence of time extension for the F/Y……..***(Only for domestic bidders)***	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
Additional requirements ***[Insert if any]***	…….	……	…….	……	……

2.2 Pending Litigation

Criteria		**Compliance Requirements**			**Documents**
Requirement	**Single Entity**	**Joint Venture**			**Submission Requirements**
		All Partners Combined	**Each Partner**	**One Partner**	
2.2.1 Pending Litigation					
All pending litigation shall be treated as resolved against the	must meet requirement by itself or as	not applicable	must meet requirement by itself or as partner to past	not applicable	Form LIT - 1

[2] **Note: Only the contracts accepted since 2078-12-03 i.e. March 17, 2022 are considered and contracts those are running under any type of foreign assistance are not accounted for this purpose.**

Bidder and so shall in total not represent more than …… (1)….. percent of the Bidder's net worth.	partner to past or existing JV		or existing JV		

Note:

(1) The percentage should normally be within the range of 50% to 100% of the Bidder's net worth.

2.3 Financial Situation

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
2.3.1 Historical Financial Performance					
Submission of audited balance sheets and income statements, for the last five (5) years to demonstrate the current soundness of the Bidder's financial position. As a minimum, a Bidder's net worth **for the last year** calculated as the difference between total assets and total liabilities should be positive.	must meet requirement	not applicable	must meet requirement	not applicable	Form FIN - 1 with attachments

Note:

(1) The financial information provided by a Bidder should be reviewed in its entirety to allow a truly informed judgment, and the pass-fail decision on the financial position of the Bidder should be given on this basis. Balance sheet of the past three to five year's period which shall be decided according to the nature of the work.

2.3.2 Average Annual Construction Turnover					
Minimum average annual construction turnover of NRs 29 M, calculated as total certified payments received for construction contracts in progress or completed, within best three years out of last ten fiscal years.	must meet requirement	must meet requirement	must meet ……(3)…… of the requirement	must meet ……(4)…… of the requirement	Form FIN -2

Only the net amount shall be calculated after deducting the amount for VAT and such amount shall be adjusted to present value by applying wholesale price index of Nepal Rastra Bank.

Note:

(2) The amount stated should normally not be less than 1.5 x V/T, the estimated annual turnover in the subject contract based on a straight-line projection of the **Engineer's** estimated cost (V), over the contract duration (T) in year. **The Engineer's estimated cost (V) is taken without VAT and contingencies but including provisional sum.** Contract duration less than one year shall be considered one year. The multiplier of 1.5 may be reduced up to1 (one) in accordance with the size, nature and complexity of contracts.

(3) Usually not less than 25 %

(4) Usually not less than 40 %

2.3.3 Financial Resources					
Using Forms FIN - 3 and FIN - 4 in Section IV (Bidding Forms) the Bidder must demonstrate access to, or availability of, financial resources such as liquid assets[3], unencumbered real assets, and other financial resources, (other than any contractual advance payments) to meet the cash-flow requirement of 8 M..	must meet requirement	must meet requirement	must meet ….(6)…. of the requirement	must meet ….(7)…. of the requirement	Form FIN - 3

Note:

(5) Construction cash flow requirement for a number of months (to the nearest half-month), determined as the total time needed by the Employer to pay a contractor's invoice, allowing for (a) the actual time consumed for construction, from the beginning of the month invoiced, (b) the time needed by the Project Manager to issue the monthly payment certificate, (c) the time needed by the Employer to pay the amount certified, and (d) a contingency period of one month to allow for unforeseen delays. **The total period should not exceed three months for estimated cost (excluding Vat) more than NRs. 250 Millions and for estimated cost (excluding Vat) less than NRs. 250 Millions, the total period should not exceed 5 months.** The assessment of the monthly amount should be based on a straight-line projection of the estimated cash flow requirement over the particular contract period, neglecting the effect of any advance payment and retention monies, but including contingency allowances in the estimated contract cost.]

(6) Usually not less than 25 %

(7) Usually not less than 40 %

2.3.4 Required Bid Capacity

[3] **Liquid Assets mean cash and cash equivalents, short-term financial instruments, short term available-for-sale-securities, marketable securities, trade receivables, short-term financing receivables and other assets that can be converted into cash within ONE YEAR.**

The bidding capacity of the bidder should be equal to or more than the NRs...**16 M**……	must meet requirement	must meet requirement	must meet …**(25%)**…… of the requirement	must meet …… **(40 %)**…… of the requirement	Form FIN - 4 and Form FIN - 5

Note:

(8) **The amount stated should be** **80 % to 100 % of** Engineer's Estimate (without VAT and Contingencies but including Provision Sum) in round figure

(9) Usually not less than 25 %

(10) Usually not less than 40 %

2.4 Experience

Criteria		Compliance Requirements			Documents
Requirement	**Single Entity**	**Joint Venture**			**Submission Requirement**
		All Partners Combined	**Each Partner**	**One Partner**	
2.4.1 General Construction Experience					
Experience under construction contracts in the role of contractor, subcontractor, or management contractor for at least the last 10 years prior to the applications submission deadline.	must meet requirement	not applicable	must meet requirement	not applicable	Form EXP - 1

Note:

(1) Insert number of years in words and figures. The time period is normally 5 years, but may be reduced to not less than 3 years, according to the nature of works.

2.4.2 Specific Construction Experience					
(a) Contracts of Similar Size and Nature					
(i) For Works with value up to NRs. 50 million					
Participation as Prime contractor, management contractor, or subcontractor, in at least 1 CSEB building Contract with a value of at least NRs. 8 Million within the last ten (10) year.	must meet requirement	not applicable	not applicable	must meet requirement	Form EXP – 2(a)
(ii) For Works with value above NRs. 50 million					
Participation as Prime contractor, management contractor, or subcontractor, in at least One (1) Contract within the last ten **(10)** years, with a value of at least NRs …..(3)…. that have been successfully or are substantially completed and that are similar to the proposed works. The similarity shall be based on the physical size, complexity, methods, technology or other characteristics as described in Section VI, Works Requirements.	must meet requirement	not applicable	not applicable	must meet requirement	Form EXP – 2(a)
(iii) For complex works with value up to NRs. 50 million**					
Participation as Prime contractor, management contractor, or subcontractor, in at least One (1) Contract within the last **ten (10)**) years, with a value of at least NRs …..(2) …. that have been successfully or are substantially completed and that are similar to the proposed works. The similarity shall be based on the physical size,	must meet requirement	not applicable	at least one Contract within the last **ten (10)** years with a value of at least NRs …..**(4)**…. that have been successfully or are substantially completed and that are similar	must meet requirement	Form EXP – 2(a)

complexity, methods, technology or other characteristics as described in Section VI, Works Requirements.			to the proposed works		
(iv) For complex works with value above NRs. 50 million**					
Participation as Prime contractor, management contractor, or subcontractor, in at least One (1) Contract within the last **ten (10)**) years, with a value of at least NRs …..(3) …. that have been successfully or are substantially completed and that are similar to the proposed works. The similarity shall be based on the physical size, complexity, methods, technology or other characteristics as described in Section VI, Works Requirements.	must meet requirement	not applicable	at least one Contract within the last **ten (10)** years with a value of at least NRs …..**(4)**…. that have been successfully or are substantially completed and that are similar to the proposed works	must meet requirement	Form EXP – 2(a)

Only the net amount shall be calculated after deducting the amount for VAT and such amount shall be adjusted to present value by applying wholesale price index of Nepal Rastra Bank.

Complex works means those works involving complex technology such as tunnel roads, roads (asphalt concrete, Rigid pavement with high grade concrete etc.), major/special bridges (pre stress bridge, special type of bridges such arch bridge, cable stayed bridge, suspension bridge etc.), airport, large water supply projects, large irrigation projects, hydropower projects and similar works. **However in case of complex works like tunnel roads, airports, railway lines, hydropower projects etc. for which experienced domestic bidders may not be available in market, in order to enhance capability of domestic bidders, the qualification criteria may be specified in a similar manner for non-complex works i.e. each partner's requirement may be specified as "not applicable".

Note:

(2) Insert amount in Nepalese rupees, which is **40%** (in above round figure in thousand) of the estimated value **(without VAT and contingencies but including provisional sum)** of the subject contract.

(3) Insert amount in Nepalese rupees, which is **60%** (in above round figure in thousand) of the estimated value **(without VAT and contingencies but including provisional sum)** of the subject contract.

(4) Only in case of complex works, insert amount which is 10% (in above round figure in thousand) of the estimated value **(without VAT and contingencies but including provisional sum)** of the subject contract.

(b) Construction Experience in Key Activities					
For the above or other contracts executed during the period stipulated in 2.4.2(a) above, a minimum construction experience in the following key activities : *[list activities indicating number or rate of production as applicable; for the key activity (ies) in the subject contract.*	must meet all requirements	must meet all requirements	not applicable	not applicable	Form EXP - 2(b)

The rates should be about 80% of the estimated production rates of the key activity(ies) in the subject contract as needed to meet the expected construction schedule with due allowance for adverse climatic conditions.]					
Construction of building with CSEB Bricks with 115 m3 or more					

- Under Criterion 2.4.2 (a), the specified requirements define the similarity of contracts, whereas the key activities or production rates to be specified under Criterion 2.4.2 (b) define the required capability of the Bidder to execute key components of the Works. There shall be no inconsistency or duplication of requirements between Criteria 2.4.2(a) and 2.4.2(b).
- For the rate of production, the rate of production shall be on the basis of the average during the entire contract period.
- Only the activities having weightage 10 percent or more of the total estimated amount that should be manufactured or built by contractor should be considered as key activities
- Key activities or production rates to be specified shall not restrict innovation and better quality.
- **Key activities or production rates of different contracts for a particular duration can be added while evaluating**
- While specifying key activities or production rates, it shall be assured and to be recorded by public entity so that sufficient bidders with required qualification are available in market for adequate competition
- Key activities or production rates to be specified shall be unambiguous e.g. environmental friendly, international/high standard, complex technology etc.
- While specifying Key activities or production rates, the similarity shall be based on the complexity, methods or technology to be adopted.
- The activities that can be sub-contracted or readily available in the market (e.g. lift, elevator, electrical works, special type of facilities etc.) shall not considered as key activities.

2.5 Subcontractors

The experience and financial capacity of the sub-contractors shall not be added to those of the Bidder for purposes of qualification of the Bidder.

The sub-contractors proposed shall be fully qualified for their work proposed, and meet the following criteria:

2.5 (a) Nature of Works that can be sub contracted:

(i) ……..

(ii) ……..

Note: Employer should specify the nature of work, if sub-contracting is permitted.

2.5 (b) Qualification Criteria

The proposed sub-contractor shall meet the following requirements:

1) Completion of 80% of the quantity of the work being sub contracted

2) Average Annual Construction Turnover for the work being sub contracted should be at least 1.5 * V/T where V is the proposed value of sub contract and T is time in year. For contract duration of up to 1 year, T shall be “1”.

3) Financial Resources**:** The sub contract must demonstrate that it has the financial resources to meet its current contract commitment plus three months’ requirements for the sub contracted work.

Note: Delete **2.5** *(b) if* **2.5** *(a) is not applicable*

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 Technical Bid

The Bidder must accomplish the Letter of Bid in its letter head 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) Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of ***[insert validity period as specified in ITB 18.1 of the BDS]*** 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.

(d) Our firm, including any subcontractors or suppliers for any part of the Contract, have nationalities from eligible countries in accordance with ITB 4.2 and meet the requirements of ITB 3.4,& 3.5

(e) 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(e), other than alternative offers submitted in accordance with ITB 13.

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

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

(h) We declare that, 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 and we have not been punished for an offense relating to the concerned profession or business.

(i) We declare that we are solely responsible for the authenticity of the documents submitted by us. The document and information submitted by us are true and correct. If any document/information given is found to be concealed at a later date, we shall accept any legal actions by the Employer.

(j) 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.

(k) If our Bid is accepted, we commit to mobilizing key equipment and personnel in accordance with the requirements set forth in Section III **VI Works Requirement**) and our technical proposal, or as otherwise agreed with the Employer.

(l) We declare that we have not running contracts more than five (5)[4] in accordance with ITB 4.9.

Name: .....

In the capacity of .....

Signed ……...

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

Date ……....

[4] **Note: Except contracts accepted and running under any type of foreign assistance, all the contracts accepted and running since 2078-12-03 i.e. March 17, 2022 needs to declare.**

Letter of Price 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 18.1]*** 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) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract:[5]

Name of Recipient	**Address**	**Reason**	**Amount**
.....	.....	.....	.....
.....	.....	.....	.....

(h) We understand that this bid, *together with your written acceptance thereof i*ncluded **i**n your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed;

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

(j) We declare that we are solely responsible for the authenticity of the documents submitted by us.

(k) We agree to permit the Employer/DP or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by the Employer.

Name: .....

In the capacity of .....

Signed ……...

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

Date ……....

---

[5] If none has been paid or is to be paid, indicate "None".

Table of Price Adjustment Data[6]

[To be used if Price Adjustment is applicable as 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

[6] **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[7]

[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 and 5.

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.

[7] **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 Letter head of the Commercial bank or any Financial Institution eligible to issue Bank Guarantee as per prevailing Law)

Beneficiary: ..... **name and address of Employer** ……
Date: ……Bid Security No.: .....
We have been informed that. …… ***[insert name of the Bidder]*** (hereinafter called "the Bidder")intends to submit its bid (hereinafter called "the Bid") to you for the execution of ……...***name of Contract*** . …… under Invitation for 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 of Technical and Price 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 Technical Bid and Price 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) changes the prices or substance of the bid while providing information pursuant to clause 27.1 of ITB; or

(d) 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.

(e) 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).

Technical Proposal Format

Personnel

Equipment

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Others

Personnel

Form PER - 1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements for each of the positions listed in Section **VI** (**Work Requirements**). The data on their experience should be supplied using the Form below for each candidate.

No.	Name	Position*	Academic Qualification	Total Work Experience [Years]	Experience in Similar Works [years]
1.					
2.					
3.					
4.					
5.					

* As listed in Section **VI** (**Work Requirements**).

Form PER - 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below.

Position*		
Personal Information	Name	Date of Birth
	Professional qualifications	
Present employment	Name of employer	
	Address of employer	
	Telephone	Contact (manager/personnel officer)
	Fax	E-mail
	Job title	Years with present employer

Summarize professional experience over the last twenty years in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

From*	**To***	**Company, Project, Position and Relevant Technical and Management Experience***

Note:

In case of e-submission the Resume of Proposed Personnel shall be submitted on notification by the Employer as per ITB 27.

Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section VI (Work Requirements). A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

(i) For the equipment under Bidder's ownership

No.	Equipment Type and Characteristics	Total Nos. of Equipment under Bidder's Ownership	No. of Equipment engaged/proposed for ongoing/committed contracts	Nos. of Equipment proposed for this contract
1.				
2.				
3.				
4.				
5.				

(ii) For the Equipment to be leased/hired

No.	Equipment Type and Characteristics	Total Nos. of Equipment under the ownership of lease/hire provider	No. of Equipment engaged/committed for other works	Nos. of Equipment proposed to be leased/hired for this contract
1.				
2.				
3.				
4.				
5.				

Type of Equipment*		
Equipment Information	Name of manufacturer	Model and power rating
	Capacity*	Year of manufacture
Current Status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	

The following information shall be provided only for equipment not owned by the Bidder.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	email
Agreements	Details of rental / lease / manufacture agreements specific to the project	

The Bidder shall be solely responsible for the data provided. However, this shall not limit the right of Employer to verify the authenticity of submitted information.

Note:

In case of e-submission the "Agreements" shall be submitted on notification by the Employer as per ITB 27.1

Bidder’s Information and Qualification Format

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Others

Bidder’s Qualification

To establish its qualifications to perform the contract in accordance with Section III (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

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 20.2. 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 20.2. 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

	Participation in Bidding Process				
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.

Form LIT - 1: Pending Litigation

Each member of a JV must fill in this form

Pending Litigation			
🗀 No pending litigation in accordance with Criteria 2.2 of Section III (Evaluation and Qualification Criteria) 🗀 Pending litigation in accordance with Criteria 2.2 of Section III (Evaluation and Qualification Criteria)			
Year	**Matter in Dispute**	**Value of Pending Claim in NRS**	**Value of Pending Claim as a Percentage on Net Worth**

Form FIN - 1: Financial Situation

Each Bidder or member of a JV must fill in this form

Financial Data for Previous 3 Years [in NRS]		
Year 1 :	**Year 2 :**	**Year 3 :**

Information from Balance Sheet

Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			

Information from Income Statement

Total Revenues			
Profit Before Tax			
Profit After Tax			

- Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last three or above years, as indicated above, complying with the following conditions.
- All such documents reflect the financial situation of the Bidder or partner to a JV, and not sister or parent companies.
- Historic financial statements must be audited by a certified auditor.
- Historic financial statements must be complete, including all notes to the financial statements.
- Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

Form FIN - 2: Average Annual Construction Turnover

Each Bidder or member of a JV must fill in this form

The information supplied should be the Annual Turnover of the Bidder or each member of a JV in terms of the amounts billed to clients for each year for work in progress or completed to NRs at the end of the period reported.

Annual Turnover Data for the Last 10 Years (Construction only)	
Year	Amount Currency

- **Average Annual Construction Turnover (Best three years within the last 10 years)**

Form FIN - 3: Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as indicated in Section III (Evaluation and Qualification Criteria).

Financial Resources		
No.	**Source of financing**	**Amount (in NRS)**
1		
2		
3		

Note :

The letter from the Bank must be unconditional.

Form FIN – 4: Bid Capacity

Each Bidder or member of a JV must fill in this form

Bid Capacity = [(5 x A) – B]

A = Average Annual Turnover of best three years out of last ten fiscal years.

B = Annual Value of the existing commitments and works (ongoing) to be completed, calculated from **FIN-4.**

SN	Name of Bidder	Pan No.	A, in Million	B, in Million	Bid Capacity, in Million
1					
2					
3					

Total Bid Capacity :

Signature of Bidder

Form FIN-4 5: Current Contract Commitments / Works in Progress

Bidders and each partner to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Current Contract Commitments (For Calculation of B with reference of FIN-3)									
No.	**Name of Contract**	**Name of the Contractor/s**	**Employer's Contact Address, Tel, Fax**	**Contract Share in % (a)**	**Contract Amount in Millions (b)**	**Contract Date(yyyy-mm) (c)**	**Initial or Revised Contract Duration (months) (d)**	**Value of outstanding works [In Millions, NRS]# (e)**	**Estimated Time in Month to Complete the outstanding works (f) = (c) + (d) – Date of Invitation of Bid (f)**
1									
2									
3									
4									

Signature of Bidder

 # The Outstanding Works means Contract Price (excluding Vat) minus Work Evaluated by Employer till the reference date. Bidder shall have to submit the relevant documentary evidence to substantiate the facts/figures.

Note 1: "B" shall be calculated as : $B = \sum \left[\frac{(e) \times (a)}{(f)} \right] x12$ **, If (f) is less than 12, then value of (f) shall be taken as 12.**

Note 2: If Initial or Revised Contract Date is run out with respect to Date of Invitation of Bid, the Estimated Time in Month to Complete the outstanding works shall be taken equal to 12 months.

Form EXP - 1: General Construction Experience

Each Bidder or member of a JV must fill in this form.

General Construction Experience				
Starting Month Year	**Ending Month Year**	**Year**	**Contract Identification and Name and Address of Employer Brief Description of the Works Executed by the Bidder**	**Role of Bidder**

Form EXP - 2(a): Specific Construction Experience

Fill up one (1) form per contract.

Contract of Similar Size and Nature			
Contract No…… of…..	**Contract Identification**		
Award Date		**Completion Date**	
Role in Contract	🗀 **Contractor**	🗀 **Management Contractor**	🗀 **Subcontractor**
Total Contract Amount	🗀 **NRS ……..**		
If Partner in a JV or subcontractor, specify participation of total contract amount	**Percent of Total**	**Amount**	
Employer's Name **Address** **Telephone/Fax** **Number** **E-mail**			
Description of the similarity in accordance with Criteria 2.4.2 (a) of Section III			
Note : ***The Employer should insert here contract size, complexity, methods, technology, or other characteristics as described in Section VI (Work Requirements) against which the bidder demonstrates similarity in the box on the right-hand-side.***			

Form EXP - 2(b): Specific Construction Experience in Key Activities

Fill up one (1) form per contract.

Contract of Similar Size and Nature			
Contract No…… of……..	**Contract Identification**		
Award Date		**Completion Date**	
Role in Contract	🗀 **Contractor**	🗀 **Management Contractor**	🗀 **Subcontractor**
Total Contract Amount	🗀 **NRS ……..**		
If Partner in a JV or subcontractor, specify participation of total contract amount	**Percent of Total**	**Amount**	
Employer's Name **Address** **Telephone/Fax** **Number** **E-mail**			
Description of the similarity in accordance with Criteria 2.4.2 (a) of Section III			
Note : *The Employer should insert here production rate(s) for the key activity (activities) subject contract against which the bidder demonstrates in the box on the right-hand-side production rates achieved by him on previous contracts.*			

Section V - Eligible Countries

[This section contains the list of eligible countries. Select one option, either GoN Funded or DP Funded.]

For GoN funded*: [with estimate up to NRs. -5 Billions]*

For the purpose of ITB 4.2: "**Nepal"**; and

For the purpose of Country of Origin ITB 5.1 and GCC 79.2: **"all Countries"**

For DP funded: [**attach list as per their list of eligible countries]**

Part II : EMPLOYER'S REQUIREMENTS

Table of Clauses

Section VI: Works Requirements

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

Scope of Work

1. Background

1.1 MBUST intends to construct three CSEB masonry buildings - i) two-story Guard house, ii) one-story guard house, and iii) one-room office building within the MBUST Complex, Chitlang.

1.2 Description of the CSEB Masonry Buildings comes as follows:

a) There will be total of 3 buildings - i) two-story Guard house (Ground Floor area: 123.35 sq. m., First Floor area: 103.9 sq. m., Total Built-Up area: 227.25 sq. m.), ii) one-story guard house (Total Built-Up area: 36.22 sq. m.), and iii) one-room office (Total Built-Up area: 32.15 sq. m.).

b) All three CSEB Masonry Buildings are Load-bearing masonry structures.

c) Each building location is different but are within the boundary of MBUST compound.

d) The dimension of CSEBs used for the buildings will be the same as that of Standard Brick, i.e., 230mmX115mmX55mm.

e) The external wall thickness of two-story building will be of 350mm and for one-story will be 230mm respectively.

f) The Masonry walls are to be built with fair face both internal and external in perfect line and level as per instruction of site engineer.

g) The slab shall be RCC with a thickness of 125 mm, and waterproofing paint is required at the roof and terrace.

h) The door frame is to made of Nepali Agrakh, the door of Teak wood, and the windows are to be double-glazed, sliding and made of aluminum.

i) The floor finishing for all three buildings shall be of cement screeding and punning, except for bathrooms (tiles on the floor and the walls), roof of all buildings and terrace in the 2-story guardhouse (tiles on the floor), and parqueting on the floor of 3 rooms to be used as staff room in the 2-story guardhouse.

j) No plastering and punning are required for the CSEB walls, but *must be* painted of 1 coat primer and 2 coats of *approved* color.

k) CSEBs must be subjected to lab and field tests satisfactory to and approved by the site engineer or equivalent. The lab tests shall be conducted at the facility that can provide verified reports, such as Build Up Nepal, InnoCSR Nepal Pvt. Ltd., or similar, which shall meet the approval of the MBUSTDB team.

l) All construction works should be carried out as per the instructions and satisfaction of site engineer.

1.3 The Contractor shall employ only competent workmen for the execution of the Works, and all such Works shall be performed under direct supervision of an expert civil engineer/site supervisor.

Specifications

Notes on the Specifications

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

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

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

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

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

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

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

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect

shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national, or relate to a particular country or region, other authoritative standards that ensure a substantially equal or higher quality than the standards and codes specified will be accepted subject to the Project Manager's prior review and written consent. Differences between the standards specified and the proposed alternative standards shall be fully described in writing by the Contractor and submitted to the Project Manager at least 30 days prior to the date when the Contractor desires the Project Manager's consent. In the event the Project Manager determines that such proposed deviations do not ensure substantially equal or higher quality, the Contractor shall comply with the standards specified in the documents.

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

100 GENERAL REQUIREMENTS

101 Bid Documents

The Specifications and Bills of Quantities shall be read in conjunction with the other Bid Documents. All the documents and drawings are to be regarded as mutually explanatory. In the event of any discrepancy or assumed discrepancy being found between them, the Contractor shall immediately inform the engineer of the matter in writing and the engineer shall issue his instructions in the matter in accordance with the Conditions of Contract.

102 Standards

All standards referred to in the Bid Documents or on any Contract Documents or Contract Drawings or instructions forming part of the Contract or issued under the provisions of the Contract shall refer to the editions in effect on the date of issue of the Tender Documents, or any superseding Standard, including all amendments published there to unless some other edition is specially referred to herein or referred to in instructions issued subsequent to the signing of the Contract.

The following references to standards shall be interpreted as follows:

BS	Standard by British Standards Institute
CP	Code of Practice by British Standards Institute
IS	Standard by Indian Standards Institute
ASTM	Standard by American Society for Testing and Materials
AASHTO	Standard by American Association of State Highway and Transportation Officials
NSM	Standard by Nepal Bureau of Standard and Meteorology

Equivalent internationally recognized standards would be accepted as meeting the requirements of the specification subject to approval of the engineer.

Where it is unclear which specific provisions of a Standard are intended to apply, or where Standards may conflict in their requirements, the matter shall be referred to the engineer who shall decide, which shall not constitute a variation to the contract.

The Contractor shall maintain a complete set of Standards referred to in the specification, and those deemed equivalent, on site for review by the engineer. The Contractor shall also hand over one identical set of Standards to the engineer, and the office of Madan Bhandari University of Science and Technology (MBUST).

103 Approval

The terms "approved", "directed", "instructed", "satisfactory", and "required' shall mean to the approval, direction, or requirement of the engineer.

104 Location

The proposed CSEB Masonry Buildings is located at Chitlang, Thaha Municipality, Makwanpur District, Bagmati Province.

105 Description of Works

The proposed work consists of construction of the RCC frame structure building at the selected location, shear wall, brick masonry works, door/window, plastering works, painting on inner walls, floor/wall tile works, false ceiling works, metal works, piping and sleeve works for electrical, HVAC, ICT system, firefighting work and sanitary works, landscape works and other associated works.

106 Restrictions on Contractor, Method of Work & Safety Procedures

The Contractor shall take account of the restrictions, method of work, sequence of work and other conditions detailed in the following sub-clauses of this clause.

106.1 Contractor's Responsibility

The Contractor shall be solely responsible for all the vehicles, equipment and personnel employed directly or indirectly and shall be responsible for ensuring that the requirements and restrictions imposed by this specification are understood and adhered to by all personnel engaged under this contract in the execution of the works.

106.2 General Safety

The Contractor shall be responsible for safety of all workmen and other persons entering the works and shall at his own expense; where not stated otherwise take all measures, subject to the engineer's approval, necessary to ensure their safety. Such measures shall include but not be limited to:

Provision of hard hat/ helmet for everyone entering the site with approved international color coding.

Provision of gloves, boots & safety belts as instructed by the engineer.

Provision of safety and emergency regulations for fire, gas, and electric shock prevention, together with rescue operation plan.

Provision of first aid room with in the construction site.

Safe control of flowing water.

Provision and maintenance of suitable lighting to provide adequate illumination at place of work with appropriate spares and standby unit

Provision and maintenance of safe and sound slings, pulleys, ropes, and other lifting device.

Provision of safe access to any part of the works.

Provision of safety net enveloping the facade of the building as instructed by the engineer. The material used in the safety net must be to the satisfaction of the engineer.

Provision of 26 Gauge (0.41 mm) CGI sheet for temporary protection of the site area with MS hollow pipes at the interval of 1.5 m c/c minimum.

Provision of notices in local dialect temporarily or permanently during construction at locations likely to be used by the public. Placement of such notices shall depend on the existence of the nature of work in the vicinity. These notices shall be in addition to any other statutory requirements demanded by the Contractor.

The Contractor shall submit a proposal with detailed safety and emergency measures for the engineer's approval. When the proposal has been approved, English and Nepali version of the regulations shall be made available to all of his Employees and the engineer.

The Contractor shall ensure that all his Employees are fully conversant with the regulations, emergency and rescue procedures etc. and shall enforce a rule that shall instantly dismiss any employee committing a serious breach of such regulations.

106.3 Liaison

For the purpose of complying with the requirements of this section of the specification and for exchanging information on the Works the Contractor shall designate a member of his staff to be called the Contractor's Liaison Officer who shall be solely responsible for the receipt of instructions from the engineer.

The Contractor's Liaison Officer shall be a senior member of the Contractor's supervisory staff and he shall have a good understanding of all the works carried out on the site. He shall be fluent both in Nepalese and English languages. The Contractor's Liaison Officer shall also be responsible for maintaining and posting an up to date list of telephone numbers of key personnel of the MBUST Development Board, the Consultant and the Contractor who should be contacted in the event of difficulties or emergencies while the Works are in progress.

106.4 Vehicle Movements

The Contractor shall control all construction related vehicle movements so as to avoid impeding traffic flows both within and outside of the site. Queuing of vehicles on road shall not be permitted. Vehicles shall be required to wait, if required, within the Contractor's compound/yard. The Contractor shall ensure that all vehicles he intends to use on the public roads comply with and are used in accordance with all relevant statutory regulations currently enforced in Nepal. The Contractor shall take every precaution and shall make adequate provisions to prevent excavated material or other debris being dropped or deposited on the public roads from his vehicles and shall promptly comply with any instructions issued by a local authority or by the engineer to remove at the Contractor's expense any material which is so deposited. Appropriate traffic signs shall be installed on the approval of the engineer for systematic flow of vehicle and pedestrians wherever necessary.

106.5 Security Barriers

The position and construction of temporary security barriers shall be subjected to approval of the engineer.

If the Contractor fails to reinstate such barriers as required, other forced arrangement may be made to do so with any resulting costs being recovered from the Contractor.

When it is necessary to remove or breach security barriers to gain access for construction, the Contractor shall supply a uniformed security guard to control access to authorized personnel and vehicles bearing suitable pass.

106.6 Marking of Work Areas

The Contractor shall be responsible for ensuring that work areas are adequately marked in accordance with the instructions of the engineer and that adequate temporary fencing, cones, flags, and temporary markings are available and used at all times. Work Area and Hazard Markers as shown by the drawing or as instructed by the engineer shall be used.

Before commencing work in any area the Contractor shall inform the engineer that he has completed the fencing and marking of the area. The Contractor shall not be permitted to commence work until approval has been given to the fencing and marking of such area. Once approval has been given the Contractor shall be responsible for ensuring that the fencing and markings remain intact and in the approved positions until all work is completed within that area.

After completion of the work in any area the Contractor shall not be permitted to remove any fencing or markings until the engineer have inspected the work and instructed the Contractor that they may be removed.

106.7 Brief Description of Construction and Sequence of Work and Constraints

The following clauses define the general sequence of construction for the Contract and describe the limitations on work in each area for operational reasons. The engineer may from time to time require variations to the work areas or place additional or lift some restrictions or limitations on the areas. The Contractor shall take account of such variations in his Bid and shall not be entitled to any additional payment in the event of such variations.

In accordance with the Conditions of Contract the Contractor shall submit a detailed program showing the order in which individual sections of the work are to be constructed and in doing shall take account of the constraints and restrictions described in this Section of the specifications and restrictions and limitations of the contract package and work area described below. The Contractor shall also examine the site and refer to the drawings for additional information on various constraints that may apply.

1. General

The Contractor shall generally be allowed to work on site subject to security and safety conditions of clause 106 and only if the workforces are fully supervised. If the Contractor cannot demonstrate that the works shall be carried out in manner that is satisfactory to the engineer, further restriction shall be imposed to ensure the safety of the personnel on site and the Contractor shall not have any recourse to additional compensation.

2. Access to Work Area

The Contractor may obtain access to the work at a point subject to the security, safety and coordination consideration of clause 106 of this specification. The Contractor's yard shall be located nearby the site on suitable area arranged by the Contractor. The yard should be away from obstacles limitation zone fixed by the engineer.

Access to the work yard may be done through existing access road. The Contractor shall construct temporary access road as and if required to haul the equipment and materials to work yard. No extra payments shall be claimed by the contractor for such temporary access.

3. Damage to Services

The contractor shall be held liable for all damage to roads, shoulders, drainage, irrigation ditches, mains, pipes, electric cables, lines or services of any kind caused by him or his sub-contractors, if any, in the execution of the works.

The Contractor must make good or arrange to make good any damage at his own expense without delay and additional cost to the Employer and, if necessary carry out any further repair work ordered by the engineer. Any damage caused by the use shall be rectified / reinstated by similar materials as in existing construction.

4. Protection of Existing Facilities

The Contractor shall protect all existing facilities, buildings, monuments and alike in the area of the works and shall not allow his personnel or sub-contractors or others within the work site to interfere with operation of these facilities.

5. Deliveries

The deliveries, the Contractor's yard and work area should be in a manner to suit local ordinances and minimize disturbances to local population.

106.8 Contract Package

1. Scope

The proposed Work consists of construction of the RCC frame structure building at the selected location, shear wall, brick masonry works, door/window, plastering works, painting on inner walls, floor/wall tile works, false ceiling works, metal works, piping and sleeve works for electrical, HVAC, communication, networking, firefighting and sanitary works, landscape works and other associated works.

2. Avoiding Disruption

It is required that all this work be undertaken with minimal disruptions to traffic and daily activities of local people.

3. Methodology of works

Construction works must be carried out in stages. Any work related to building must not start until the Contractor is fully prepared with construction materials in stockpile, installation, testing and commissioning of necessary plants and equipments; all requisite construction and other equipment are at site and in proper working condition; and approved safety and management measures are in place. Construction sequence shall be as shown on Drawing or as directed by the engineer in order to avoid disruption in operation of movement and complete the work within the time as specified in Contract Data. Contractor should be prepared to work during night time also.

4. Temporary Relocations

At various stages of work, existing utilities and functions may require to be temporarily relocated. The Contractor shall cooperate with the Employer and other affected to minimize disruption, find suitable relocation and provide temporary services and facilities, as required. All temporary relocations shall be approved by the engineer. The Contractor shall include temporary relocations in the Schedule (Critical Path Analysis) and Phasing Drawings submitted as a requirement of the Conditions of Contract and this Section of the specification.

5. Separation of Work Area

At all times, work areas must be separated from Public, Consultant and Staff Areas by temporary hoardings. The Contractor shall be responsible for ensuring that consultant’s areas remain free of dust, dirt, and debris arising from the construction and shall be responsible for any cleaning work thus to be executed immediately as directed by the engineer.

6. Weather Protection

The work shall be protected from the effects of weather. Work shall be undertaken so as to avoid damage from wind and rain, or extremes of temperature or humidity.

7. Temporary Signage

The Contractor shall be responsible for providing all temporary signage, to the engineer's approval, as required during construction. The Contractor shall erect temporary hoarding or secure fencing as he requires securing the construction areas in order to protect the public, which shall remain active at all times during construction.

8. Maintaining Services

At all times, existing services must be protected and adequately maintained. This may require temporary measures, which shall be the responsibility of the Contractor subject to the engineer's approval. Temporary relocation of utilities, if any, shall be provided by the contractor at his own expense. Also, the Contractor shall ensure no disruption to the existing water supply, which also serves fire protection requirements. Programmed shut downs for re-connections shall be approved in advance by the engineer and shall be carried out in accordance with the approved schedule. Portions of the construction and relocation of all permanent and temporary lanes and access routes must be undertaken at night when the area is not busy.

107 Submittals

107.1 General Requirements

The Contractor shall maintain an approved system of recording and tracking submissions indicating dates, status (i.e. approved, not approved, approved subject to conditions), quantities, and other details as required. Copies of all approved submissions shall be retained securely and properly filed on site, available for reference by the engineer.

107.2 Program of Work

As soon as possible after the letter of acceptance and before signing of the Contract Agreement, the Contractor shall submit in triplicate the program and particulars required. In the program and particulars the Contractor shall provide details of how he proposes to carry out the Works including:

a. A Critical Path analysis showing all major activities trades and phases of works. Detail shall be sufficient and to the satisfaction of the Employer to demonstrate the relationships and interdependencies between all aspects of the work. The Critical Path Analysis shall identify off-site as well as on-site activities including delivery lead times, shop drawing production and approval, materials testing, samples submission and preparation of mock-ups. The Critical Path Analysis shall be prepared by a competent and experienced construction programmer using a computer program approved by the Employer. It shall be prepared so as to permit revisions, inclusion of additional detail and regular updates as the work progress. The Critical Path Analysis shall include sufficient time for contingencies.

b. A detailed Statement of Construction Management Procedures the Contractor proposes to adopt shall be submitted. The Contractor shall also state his intentions regarding shift work. In all respects he shall pay particular attention to the security and operation of the site and seasonal rainfall and to the construction sequencing and restrictions identified for the Contract Package.

c. Detailed Phasing Drawings showing all the proposed phases and sequences of work, lines, types and details of hoardings and barriers, provisions to maintain public access and safety, temporary signage and all temporary work proposed shall be submitted by the Contractor to the satisfaction of the engineer. The scale of such drawings shall not be less than 1:500 for site works. As necessary to clarify the stages of work, independent drawings representative of each stage shall be prepared.

d. Once approved by the Employer the Critical Path Analysis, Statement of Construction Management and Phasing Drawings shall be incorporated into Item 2 of the Form of Agreement and shall be strictly adhered to unless any alterations are found to be necessary during the construction of the Works and are confirmed in writing by the engineer.

107.3 Contractor's Monthly Progress Report

The Contractor shall report monthly progress to the engineer on charts submitted in six copies and showing actual work done superimposed upon copies of the program. He shall furnish an explanation of any deviation from the program stating his proposals for improving progress should this be lacking in any respect and he shall furnish the engineer with his amended critical path analysis in triplicate.

107.4 Samples

The engineer may at his discretion request or take samples of any material or product intended for use in the Works. Where samples are requested in the specification they shall be submitted in the number requested or if not specified then as directed by the engineer. Samples shall be of the type and size specified and be fully representative of the materials proposed to be used. Samples shall be indelibly and clearly marked with the date of submission, material reference and any other data required to determine the source and kind of sample.

One or more samples of each kind submitted shall either be returned marked *"ACCEPTED"* and signed by a representative of the Employer or the Contractor shall be requested to provide new samples and be notified of deficiencies present in the submitted samples. One or more "accepted" samples shall be retained by the engineer for comparison with materials and workmanship supplied and shall form the standard of acceptance. One or more "accepted" samples shall be retained at the Contractor's site office and be available for reference on request.

The engineer may reject any materials and goods which in his opinion are inferior to the samples thereof previously approved and the Contractor shall promptly remove such materials and goods from the Site.

107.5 Copies of Orders

The Contractor shall provide the engineer with one copy each of all orders for the supply of materials and goods required in connection with the Works as the engineer may require.

107.6 Field Trials / Mock-Up

Field trials/mock-up of works (e.g. brickwork, stone pitching, plum concrete, steel structures, false ceiling) or specified shall be prepared by the Contractor for review and acceptance of the engineer. They shall be in a location agreed with the engineer, and if so specified may be incorporated into the work in a clearly identified position upon approval of the engineer. The Contractor shall carry out such changes or carry out field trials as required obtaining the engineer's approval. Approved field trials shall form the standard of acceptance of subsequent materials and workmanship.

107.7 Photographic Record of Existing Condition

A complete photographic record of existing site conditions shall be undertaken by the Contractor before commencing any work on site. The record shall include existing pavement, drainage, water supply and site areas affected by the work in sufficient detail to clearly portray all existing conditions of structures, finished, surfaces, fixtures and fittings. The Contractor shall submit three copies of 100 x 150 mm color prints with digital copies for the engineer's approval. No work shall be undertaken prior to receiving approval from the engineer.

107.8 Photographic Progress Record

The Contractor shall provide a photographic and video graphic record of the execution of the works by having photographs taken at daily, if felt necessary, intervals from such points as the engineer may specify. The Contractor shall supply three copies of 100 x 150 mm color prints together with the digital copy of each photograph to the engineer within three days of the end of the month. Three sets of the aforementioned prints shall be captioned, and a typewritten label indicating the caption, date and signature of the Contractor and the engineer shall be affixed at the back of each photograph. One copy of such prints shall be returned to the Contractor.

107.9 As Built Drawings

The Contractor shall submit As Built Drawings in soft copy and print, within 30 (thirty) days of the issuance of the Letter of Completion. The following requirements shall apply for the same:

1. The drawings shall be prepared in CAD System.
2. The drawings shall include all available information on existing conditions as well as new construction.
3. Site drawings shall include as in the original drawings.
4. The drawings shall show the following:
    a. All site services existing, new and altered, including invert levels, sizes, capacities, manholes, lining and all other features.
    b. Detail log of groundwater exploration including tests performed, well development data.

c. One original and three copies of drawings shall be submitted in bound sets sub-divided by discipline. Copy right of all material submitted shall be vested in the Employer without further compensation or charge.

108 Contract Drawings

The Contractor shall be issued with two copies of each of the Contract Drawings.

109 Construction Drawings and Shop Drawings

1. The Contractor shall prepare and submit construction drawings and shop drawings for details of construction work as and when instructed by the engineer.

2. The construction drawings shall show, at a suitable scale, all the particulars of the work including dimension, materials, finishes, lines, levels, tolerances and other details to show compliance with the specification, the suitability of item for its compliance.

3. The shop drawings shall show at a suitable scale all particulars of the work including sizes, capacities, performance, manufacturer, materials, methods of jointing, finishes, tolerance, site dimensions, lines, levels and all other details of work required to show compliance with the specifications, the suitability of the item for its purpose. Each shop drawing for non-catalogue items shall be prepared specifically for the project and shall include a title block indicating the project title, date of preparation, scale, item described by the drawings, fabricator's name, Contractor's name and a drawing number.

4. Brochures and/or standard drawings submitted for catalogue items of standard manufacture shall be clearly marked in green ink noting the relevant information and items to be supplied and the date of submission. The information supplied shall be equivalent in detail and content as that supplied for custom produced shop drawings.

5. The engineer shall review the drawings only for their general compliance with the intent of the drawings and specifications. Responsibility for accuracy of dimensions, technical design, performance and suitability for intended purpose of the items shall remain with the Contractor.

6. Three copies of each construction drawing and shop-drawing are to be submitted in sufficient time to allow for review, possible revisions and resubmission for approval prior to ordering materials, fabricating, installing and coordinating all affected and contingent work without delay to the schedule of construction.

7. The engineer shall retain two copies of all construction drawings and shop drawings. The remaining copy shall be returned to the Contractor signed by the engineer and marked "REVIEWED" with either:
   a. a request for resubmission and notes as to deficiencies;
   b. a note indicating the drawing has been reviewed but is subject to conditions noted or listed, and does not require resubmission; or
   c. a note indicating the drawing has been reviewed and is considered to meet the intent of the design and does not require resubmission.

8. The drawings shall be submitted at least seven days before the commencement of construction of work for which these drawings are intended.

9. Do not commence construction, fabrication, or order materials / products until sub-drawings or shop drawings have been reviewed and are returned under the Conditions of Contract except when / where instructed by the engineer.

110 Quality of Material and Labour

All materials incorporated in the Works shall be new, of the best quality of their respective kinds and entirely suitable for their intended purpose and conditions of services. The Workmanship in every case shall be of the best character and the whole shall be subject to the approval of the engineer.

111 Approval of Suppliers of Materials

Before entering into any Sub-contract for the supply of any materials or goods the Contractor shall obtain the engineer's approval in writing of the Sub-contractor from whom he proposes to obtain such materials or goods. Should the engineer at any time be dissatisfied with such materials or goods or with the methods of operations carried out at such Sub-contractor's works or place of business, he shall be empowered to cancel his previously given approval of such Sub-contractor and to specify any other supplier and the Contractor shall bear any additional cost thereof.

112 Removal of Condemned Materials

The engineer may request the Contractor to remove and dispose of any materials employed or to be employed in the construction of the Works which in the opinion of the engineer, are unsuitable or have been incorrectly deposited or have suffered damage by exposure to the weather or otherwise are not in accordance with the specified requirements for such materials. The Contractor shall be entitled to no payment, whatsoever, in respect of the removal of such materials.

113 Demolitions and Removals

Demolitions and removal work noted on or inferred from the Drawings and/or specifications shall be undertaken with care. Items identified by the engineer for hand over to the Employer, or identified for relocation, shall be removed with particular care and stored so as to avoid damage. All materials otherwise removed shall become property of the Contractor and shall be removed from the site forthwith. Items demolished or removed may not be reincorporated into the work except as indicated on the Drawings or when expressly approved or instructed by the engineer.

All existing work to remain shall be protected from damage. Any work affecting the structure of elements to remain shall not be undertaken without the engineer's approval. Proper care shall be taken to prevent disruption of and damage to services.

Methods of demolition shall be approved by the engineer, and shall generally take the form of dismantling unit by unit. Demolition by heavy machinery or explosive charge shall not be permitted.

114 Disposal of Excavated Materials and Waste

The Contractor shall not dispose on the site premises any excavated materials and/or spoils of any type obtained from the Site except in designated areas as determined and given in writing by the engineer. All other materials, in excess, shall be transported and disposed outside the site premises without causing any nuisance and inconvenience to outside publics at the cost of the Contractor.

115 Matching Existing

It is intended that, new work shall match existing in line, level, appearance, methods of construction, detail, material type, kind, quality, colour, and in all other respects. Except to the degree that drawings and specifications indicate otherwise, the Contractor shall construct new work to match existing as closely as possible, where the kind, location, and function of the new work is similar. Where new work is unprecedented, the Contractor shall construct new work to the same principles to achieve a consistent appearance and required function.

116 Making Good Existing

Where work requires alteration to the existing work in any way, the Contractor shall be responsible for ensuring that the existing construction is made good. This shall mean that finishes, claddings, structures, services and all other elements are functionally restored and all work is made visually imperceptible and functional integral with existing work.

117 Setting Out

The Contractor shall set out the Works in accordance with the Drawings supplied by the engineer or as instructed in writing by the engineer. All levels shown on the Drawings are related to the points situated on the Site. Benchmarks (BMs) established during survey for design are related to these GPS points. The Contractor shall retrieve or reestablish these BMs by check surveys. The Contractor shall also establish additional benchmarks adjacent to the site. These benchmarks shall be referred to GPS points and reduced levels shall be transferred by first-order level survey. Refer also to the following Clause.

"Subject to the engineer's approval, make adjustments to setting out as required to meet lines and levels of the existing work." If, due to some constraints or reasons, the levels shown in the drawings or taken during joint survey are based on local datum the same shall be transferred to GPS.

118 Dimensions, Levels and Record Surveys

All dimensions and levels shown on the Drawings and referred to in the documents forming part of or issued under the Contract shall be verified by the Contractor on the Site, and he shall be held responsible for promptly pointing out errors or discrepancies in such dimension and levels. The Contractor shall be aware that building and civil work previously constructed and for which drawings may be provided or referred to, may have been completed by reference to obsolete datum.

The Contractor shall take and record levels in the manner directed by and in the presence of the engineer before the surface of any such area is interfered with or the works there on are begun. Such levels when approved and checked by the engineer shall be recorded on drawings which shall be signed by the Contractor and the engineer and shall form the basis of the measurements for the engineer's Certificates.

119 Testing

119.1 Quality Control Laboratory for the Works

The Contractor shall provide, operate, maintain and insure a Quality Control Laboratory for the testing of materials as required by the specification. The laboratory shall have net minimum area of about 50 square meter or as felt sufficient by the engineer comprising materials testing room, office, store and bathrooms. The floor of the laboratory shall be smooth concrete of sufficient quality to withstand the expected use. All rooms for office shall be adequately ventilated and fitted with sufficient ceiling lights and power outlets. All doors shall have a lock with two keys and all doors and windows shall be fitted with mosquito screen. All rooms shall be provided with sufficient ceiling fans, lights, power outlets, lockable doors and windows fitted with sun and mosquito screens. Piped water suitable for drinking use shall be supplied to the laboratory building, together with tank storage sufficient to provide supply for 24 hours. The engineer shall manage the facility and witness all tests.

The Contractor shall furnish and equip the laboratory and supply full details of the furniture and laboratory equipment for the approval of the engineer.

The Contractor shall be responsible for operation and maintenance of the laboratory and equipment and for providing all testing consumables for the duration of the contract. The Contractor shall help to ensure that laboratory equipments are maintained in good working order and cleaned every day for the duration of the contract. Testing apparatus shall be maintained in serviceable condition and all measuring and control equipment shall be checked and calibrated from time to time, as required by the engineer and immediately adjusted or replaced if it is found that correction is not possible. Any equipment, which become unserviceable during use shall be repaired or replaced by the Contractor at no extra cost to the Employer. All laboratory equipment shall remain the property of the Contractor, which shall be handed over to the Contractor after the completion of the contract, except the equipment that are to be handed over to the Employer as specified in Bill of Quantities.

The Contractor shall conduct the tests on materials as required in the Specifications. Tests, which might be conducted but are not listed in the specifications, shall in no way absolve the Contractor of his responsibilities under the Contract. The Contractor shall supply the engineer with two copies of the results of each test, such results being entered on printed forms approved by the engineer. A third copy of the results of each test shall be retained in the Contractor's laboratory.

Without relieving the Contractor of any of his responsibility for the testing of materials the engineer may order the Contractor to carry out additional laboratory tests in independent laboratory, as deemed necessary.

119.2 Materials Testing by Independent Laboratories

The Contractor shall be responsible for arranging for such testing to be carried out at an independent laboratory as approved by the engineer. The Contractor shall be responsible for all attendance on staff from these approved testing laboratories, including, if necessary, the provision of transport for personnel, equipment and test specimens. No testing by external laboratories shall be carried out without the written instruction of the engineer.

119.3 Quality Control Testing

Various clauses of the Specifications contained herein state the types of test, which the Contractor shall carry out for the control of the quality of Works, together with the frequencies at which each type of test shall be conducted. The Contractor's attention is drawn to the fact that the frequencies of testing specified in the relevant clauses are intended to represent only a general guide. The engineer shall be empowered to vary the frequencies at which tests are conducted should he deem this necessary for the proper control of the quality of Works. Should the engineer vary the frequency stated in the relevant clauses of the Specifications, the Contractor shall not be entitled to extra payment.

119.4 Tests Generally

The engineer may examine and may require to be tested any materials or goods required for the Works, such as he may decide from time to time. The Contractor shall arrange for the engineer and his Representatives to have unrestricted access to the Contractor's, Sub-contractor's and supplier's premises for such purpose at all times.

The Contractor shall afford the engineer all facilities, assistance, labour and appliances necessary for the convenient examination, testing, weighing or analysis of all such materials or goods. The Contractor shall provide and prepare such test pieces of any such materials or goods as the engineer may require.

Notwithstanding any tests which may have been carried out off the engineer shall be empowered to order further tests of any materials or goods to be made on the Site and to reject any such materials or goods should they fail to pass such tests on site.

119.5 Test Certificate

Should the engineer not inspect any materials or goods at the place of manufacture the Contractor shall obtain Certificates of Test from the suppliers of such goods and shall send one copy of certificates to the engineer. Such certificates shall certify that the materials or goods concerned have been tested in accordance with the requirements of the Specifications contained in the Contract Documents and shall give the results of all the tests carried out. The Contractor shall provide adequate means of identifying the materials and goods delivered to the Site with the corresponding certificates.

120 On-Site Services for carrying out the Works

The Employer may help to make available the connection points for electricity and water for the execution of work at site. Supply may be interrupted from time-to-time in the event of technical problems and supply rationing. Distribution beyond designated connection points shall be the responsibility of the Contractor. The Contractor shall comply with any regulations laid down by the Employer (if, any) for use of electricity and water supply and shall pay charges as required. The Contractor should prefer to make his own arrangement for supply of electricity and water for execution of on-site work. Interruption in supply of electricity and water supply system shall not be the reason for claim by the Contractor.

121 On-Site Sanitary Services

Sanitary services shall be the responsibility of the Contractor. The Contractor shall provide suitable temporary toilet facilities for all persons employed in the execution of the Works in a location or locations approved by the engineer. Such facilities shall be cleaned twice daily. All sanitary waste shall be removed from the site at regular intervals and disposed off in a manner approved by the engineer.

122 Contractor’s Yard

The Contractor shall make his own arrangement of area close by the site and/or within site, if given permission by the Client, to establish Contractor’s Yard, for the exclusive use of the Contractor. The Contractor may erect such temporary buildings, or provide other facilities as required. The Contractor shall be responsible for providing an approved hoarding or other visual and security barrier at the perimeter of the designated compound as required providing security to the Contractor’s facilities and safety to the public.

The Contractor shall make his own arrangements for 24 hours per day supply of electricity for power and light and of any other services required for servicing the Contractor's Yard. The Contractor shall make his own arrangements subject to approval by the engineer for the disposal of sewage and all waste materials during the execution of the Works. In the event of Contractor obtaining electricity through office supply system, the Contractor shall comply with any regulation laid down by the office for use of electricity from office system and shall pay charges, as required.

The Contractor shall make his own arrangements for providing adequate supplies of potable and other water. In the event of the Contractor obtaining water from office supply system or any other existing controlled supply, he shall comply with any regulations laid down by the office or other agencies/organization (e.g.; Department of Water Supply and Sewerage, local communities managing the water supply system) and shall pay for charges as required.

All sources of water and the quantities of water withdrawn from them shall be approved by the engineer and shall be such that the requirements of the local population in respect of water for irrigation, drinking purposes etc, are not interfered with or prejudiced in any way.

The Contractor shall be responsible for removal of the compound facilities and structures, grading of the site and restoration of the site to at least the pre-construction condition of the site (as evidenced by photographs), which may also include planting of grass upon completion of the contract.

123 Environmental Protection

Spills or discharges of pollutants resulting from the Contractor's operations, or under his control, that may cause adverse environmental effects shall be immediately reported to the engineer. This shall include, but not be limited to all petroleum products and lubricants and any solvents or cleaning compounds.

The Contractor shall clean equipment in locations where debris and run-off shall be prevented from gaining access to storm water and drainage courses. Trucks hauling excavated or other loose material from the site on all roads other than those constructed solely as haul roads shall have loads trimmed before leaving the site in order that no spillage occurs. Any spillage shall immediately be removed to the engineer's satisfaction.

All surrounding private and public property shall be protected from damage during the works. Existing trees shall be preserved. Trees shall not be trimmed, damaged or removed unless previously authorized by the engineer. Soil compaction by traffic and root zone disturbance resulting from grade changes shall be prevented. Temporary erosion control, fences, and other protective measures shall be provided by the Contractor as required.

Adequate measures shall be provided to control dust at all times during the performance of the Work, and cover or wet down materials to prevent blowing dust and debris, to the engineer's satisfaction. Areas of blown dust or debris shall be cleaned promptly as directed by the engineer. During progress of the Work the Contractor shall provide and maintain to the engineer's satisfaction, control systems to prevent fine soil materials such as clays and fine silts eroded by surface run-off from entering any storm drainage system.

124 Damage to Services

The Contractor shall be held liable for all damage to roads, irrigation ditches, mains, pipes, electric cables, lines or services of any kind caused by him or his Sub-contractors, if any, in the execution of the Works. The Contractor must make good or arrange to make good any damage or provide temporary measures as instructed by the engineer at his own expense without delay and, if necessary carry out any further repair work ordered by the engineer.

125 Disposal of Waste

The Contractor shall make adequate arrangements to the satisfaction of the engineer for the disposal of all waste, storm run-off and sub-soil water, sewage and all other waste materials arising from or connected with the execution of the Works.

126 Complaints and Claims

During the course of the work, complaints and claims may arise from the public or from various authorities. The Contractor shall satisfy the engineer that he is dealing with all such matters without delay until appropriate clearance certificates from any authority concerned are produced by the Contractor. This Clause shall in no way absolve the Contractor from his obligations under Clauses specified in the Conditions of Contract.

127 Drainage during Construction

In addition to any other requirements mentioned in the Specifications the Contractor shall submit for the engineer's approval, prior to the commencement of construction of the Works or any Temporary Works, detailed plans of the measures he proposes to take for the drainage during construction of the Works and Temporary Works, the checking out erosion of partially completed earthworks and pavements in the prevention of the movement of eroded materials and debris from construction areas into natural watercourses and on to adjoining land and stopping ponding during grading. In particular, the Contractor shall submit details of

the methods he proposes to adopt for the drainage during construction of sub grades and partially completed pavements and of the measures he proposes to take to ensure that construction activities in no way affect the stability of existing slopes.

The Contractor shall carry out at his own expense all such approved measures and any additional measures the engineer may from time to time require improving their effectiveness. The Contractor shall take such measures as the engineer may require preventing the entry of spillage from concrete mixing operations, oils or other deleterious materials into any new or existing drainage system or natural water-course. Nevertheless, should any drainage system or watercourse be fouled by such materials the Contractor shall clean the drainage system or watercourse at his own expense to the satisfaction of the engineer. The operation of this clause shall in no way absolve the Contractor from any of his obligations under the Contract.

128 Weather Conditions

Without limiting his liabilities under the Contract, the Contractor shall make suitable arrangements to protect the Works, Temporary Works and Constructional Plant against the effects of weather. Unless otherwise specified all Works are to be carried out in the dry and they shall be kept free from water coming from any source whatsoever to the satisfaction of the engineer and at the Contractor's expense. All materials shall be stored on Site in a manner approved by the engineer and the Contractor shall carefully protect from the weather all work and materials which may be affected thereby.

129 Sources of Materials

For the purpose of the Contract, borrow and quarry areas shall mean and include all such areas approved by the engineer, which the Contractor may use to excavate or quarry materials for use in the Works. At the commencement of the Works, or as soon thereafter as is practicable, the Contractor shall submit to the engineer for approval details of the sources from which he proposes to obtain sand, gravel, rock aggregates, stone and filling for the Works; the periods during which he proposes to obtain materials from each of the several sources; the means and routes by which he proposes to obtain and transport these materials. No approval by the engineer of such proposals shall relieve the Contractor of his obligation to provide all the materials required for the Works, or any other obligation under the Contract.

130 Language

The Contractor shall make provision to the satisfaction of the engineer, technical assistants, foremen and leading hands to be both Nepali and English speaking.

131 Notice Boards

The Contractor shall provide and erect professionally prepared notice boards on the Site as directed. The minimum dimensions of the boards shall be 1.5 meters by 2 meters (min.). The wording, script materials and method of mounting shall be to the approval of the engineer.

132 Units of Measurement

The Symbols for units of measurement are used in these Specifications as they are given below.

M	micron = m x 10^{-6}
mm	millimeter
m	meter
km	kilometer

sq. mm. or mm^2	square millimeter
sq.m. or m^2	square meter
sq. km. or km^2	square kilometer
ha	hectare
cu.m. or m^3	cubic meter
lit or L	liter
rad	radian
°C	degrees Celsius
kg	kilogram
g	gram = kg $x10^{-3}$
mg	milligram = kg x 10^{-6}
mg/l	milligram per liter
t	ton = kg x 10^3
kg/m^3	kilogram per cubic meter
t/m^3	ton per cubic meter
N	Newton
N/m^2	Newton per square meter
Lin. m	Linear meter
Max	Maximum
Min	Minimum

Symbols of other units, if not covered above, shall be as per SI system set out in ISO 31/1.

133 Abbreviations

The following abbreviations are used in these Specifications.

ACV	Aggregate Crushing Value
BOQ	Bill of Quantities
CR	Crushing Ratio
CLPIU	Central Level Project Implementation Unit
dia	Diameter
DoR	Department of Roads
NEC	Nepal Engineering Council
DUDBC	Department of Urban Development and Building Construction
hr	Hour
HSPC	High Strength Portland Cement
LS	Linear Shrinkage
MC	Moisture Content
MDD	Maximum Dry Density
min	Minute
MoUD	Ministry of Urban Development
no	Number (units), as in 6 no.
No	Number (order) as in No 6
NRB	Nepal Rastra Bank
OMC	Optimum Moisture Content
OPC	Ordinary Portland Cement
PI	Plasticity Index
PL	Plastic Limit

PM	Plasticity Modulus (PI x % passing 0.425 mm sieve)
POL	Petrol, Oil & Lubricant
ROW	Right of Way
SE	Sand Equivalent
sec	Second
SG	Specific Gravity
SI	International Standard Units of Measurements
JIS	Japanese Industrial Standards
IS	Indian Standard
NS	Nepal Standard
SSS	Sodium Sulphate Soundness test, loss on 5 cycles
STV	Standard Tar Viscosity
TS	Tensile Strength
UC	Uniformity Coefficient
UCS	Unconfined Compressive Strength
VIM	Voids in Mix
w/c	Water cement ratio
wt	Weight
%	Percent

134 Scale of Drawings

Drawings must not be scaled for any purpose. Site information in particular may not be accurately reproduced to scale. Figured dimensions and levels on drawings and dimensions and levels determined from site measurement only should be used. Where there is inadequate information, and/or discrepancy with-in any information provided and/or discrepancy between information provided and site conditions, the matter must be referred to the engineer for instruction.

135 Works during the Defects Liability Period

After the commencement of the Defects Liability Period the Contractor shall do nothing that might endanger the safety of the general public or facilities and he shall obey all instructions of the engineer or any other duly authorized persons or authority by the engineer in this regard. Throughout the Defects Liability Period the Contractor shall notify the engineer of the work or operations he intends to carry out on the Site and he shall obey all instructions which the engineer may give as to times and manner to working so that any inconvenience is kept to a minimum.

136 Provisional Sums

Provisional sums are identified in the Bill of Quantities. For the use of provisional sum, the Contractor shall submit quotations or proposal of work/s as per employer's needs. Drawings or specifications for the items under provisional sum shall be provided or updated to the Contractor by the engineer upon approval of the Employer.

Expenditure of Provisional Sums shall be at the direction of the engineer upon approval of the engineer in accordance with the General Conditions of the Contract Agreement and shall not be specifically limited by the scope identified.

137 Assistance for Consultant & their Representative(s)

The Contractor shall provide at all times during the continuance of the Contract all such junior survey staff including chainmen, staff men and laborers for the exclusive use of Employer/Consultant as the engineer may deem to be necessary for carrying out his duties in connection with the Contract. The workmen shall be selected for their intelligence and so far as is possible the same staff shall be provided throughout the period of the Contract.

138 Facilities for Consultant

138.1 General

The Contractor shall provide, maintain and supply services to the offices, furnishings, equipment, laboratory and vehicles for the use of the consultant and their staffs as described herein. All facilities provided to consultant and his staff shall be new.

The full details of the facilities, which the Contractor proposes to provide for the consultant and his staff shall be submitted for the approval of the consultant's representative within 7 (seven) days of the start date.

The Contractor shall not complete any arrangements, or place orders for the hire/purchase of any items, nor start work on the provisions for the facilities for the consultant's representative until he receives approval from the consultant.

The Contractor shall complete the provision of facilities for the consultant's representative within 30 days of the Start date. During this period the Contractor shall provide such temporary facilities as may be required by the consultant's representative in the execution of their duties under the Contract. Alternatively the consultant's representative and staff may make their own arrangement for temporary facilities in which case the Contractor shall reimburse the consultant's for the costs so incurred.

On completion of the Works in accordance with Conditions of Contract the consultant shall instruct the Contractor to remove those facilities not required during the Defects Liability Period. At the end of the Defects Liability Period the Contractor shall remove the remaining facilities from site in accordance with the Conditions of Contract. All furnishing, fittings and equipment provided for the use of the consultant and their staffs, except those items provided by the Contractor for the proper maintenance of the facilities of rented item, shall become the property of the Contractor at the end of the Contract.

138.2 Minimum Support Staff of Contractor

The Contractor shall provide following support staff to assist in construction supervision unless stated otherwise in the contract on site.

Table 100.1: Minimum Support Staff of Contractor

S. No.	Position	Qualification	Total Work/Business Experience (years)	In Similar Work (years)	Remarks
1	Project Manager	Masters in Construction Management or Equivalent	Not less than 7 years	Not less than 5 years	Full Time

2	Civil Engineer	Bachelors in Civil Engineering or Equivalent	Not less than 5 years	Not less than 3 years	Full Time
3	Architect	Bachelors in Architecture or Equivalent	Not less than 5 years	Not less than 3 years	Full Time
4	Electrical Engineer	Bachelors in Electrical Engineering or Equivalent	Not less than 5 years	Not less than 3 years	Required During Electrical Works
5	Sub Engineer	Diploma in Civil Engineering or Equivalent	Not less than 5 years	Not less than 3 years	Full Time

138.3 Minimum Equipment Required

Table 100.2: Minimum Equipment Requirement

S. N.	Equipment Type and Characteristics	Minimum Number Required	Owned/Leased/Hired	Remarks
1.	Excavator	1 (one)		
2.	Tipper/Trucks	2 (two)		
3.	Concrete mixer two bag capacity	2 (two)		
4.	Concrete pump(40m head)	2 (two)		
5.	Hoist with capacity 1 Ton of appropriate height	1 (one)		
6.	Needle vibrator	5 (five)		
7.	Plate vibrator	2 (two)		
8.	Water Pumps 2 Hp	2 (two)		
9.	A/C Generator, 50 KVA or more	1 (one)		

139 Basis of Payment in General Requirements & Miscellaneous

Payment shall be made at Contract unit prices or in lump sum prices for each item in the General Requirements for which the Contractor shall be entitled to payment. These prices shall be full compensation for furnishing all materials and for all labour,

equipment, tools, and incidentals necessary to complete the items. Where items are to be paid for by a Provisional Sum, terms of the Contract Agreement shall apply.

The Contractor shall be deemed to have included in other prices for any Clauses in the General Requirements for which there is no separate payment item stated below. Separate payment shall be made only for those items listed in the General Requirements and miscellaneous portion of the Bill of Quantities which include:

1. Provide and maintain photographic record - Lump Sum
2. Communication facilities as specified in BOQ - Months
3. Provide and maintain Project office - Months
4. Laboratory Tests as ordered - Provisional Sum

Actual cost of laboratory test shall include for sample transportation from site to outside laboratory, testing charges and report.

140 Insurance

140.1 Insurance of Works and Contractor's Equipment

The Contractor shall take out Insurance for the Works and Contractor's Equipment from approved agency/institution staff if provided in the contract up to the completion of the project.

140.2 Insurance against loss or damage to Property in connection with Contract

The Contractor shall take out Insurance against loss or damage to Property in connection with Contract from approved agency/institution staff if provided in the contract up to the completion of the project.

140.3 Third Party Insurance

The Contractor shall take-out Third-Party Insurance from an approved agency/institution staff if provided in the contract up to the completion of the project.

140.4 Insurance of Employer's/Consultant's Engineer and Staff

The Contractor shall insure against such liability as stipulated in Particular Conditions up to the completion of the project.

140.5 Insurance of Contractor's Labor

The Contractor shall insure against such liability as stipulated in Particular Conditions up to the completion of the project.

141 Payment

Payments made to the agency/institution and stamp charges/duties incurred if any, by the contractor in compliance of the above work shall be paid for the item in the BOQ after submission of the insurance document to the satisfaction of the engineer.

300 CLEARING, GRUBBING AND REMOVALS

301 Description

This item shall consist of clearing and grubbing all areas within the limits designated on the plans or as required by the engineer and removing all buildings and structures from the site as shown on Drawings or as directed by the engineer and as per Bill of Quantities. The work shall also include the disposal from the site, of all spoil materials resulting from clearing, grubbing and removals.

302 General

The areas denoted on the plans to be cleared and grubbed under this item shall be stacked on the ground by the engineer or and his staff. Clearing, grubbing and demolition shall be done sufficiently in advance of the earthworks and construction of permanent works in the designated area.

303 Disposal of Spoil

Spoil materials removed by clearing, grubbing and demolitions shall be disposed off by burning or by removal to approved disposal areas. Piles for burning shall be placed either in the cleared area near the center or in adjacent open spaces where no damage to trees, other vegetation, or other property will occur. The Contractor will be responsible for controlling fires and obtain the prior approval of the engineer before burning any piles of cleared materials so as to avoid interference or nuisance to aircraft operations. Ashes resulting from burning shall be removed and disposed to spoil areas unless otherwise approved by the engineer.

Waste concrete and masonry shall be disposed of in the areas indicated on the Drawings or as directed by the engineer. In no case shall discarded materials be left in piles adjacent to or within the site limits. The manner and location of disposal of materials shall be subject to the approval of the engineer and shall not create an unsightly or objectionable view.

All suitable materials from Clearing, Grubbing shall be stockpiled in designated area for reuse purpose as directed by the engineer.

The removal of existing utilities not under the jurisdiction of hospital or site premises which is required to permit orderly progress of work shall be accomplished by the relevant local agency unless otherwise shown on the Drawings. Whenever such power or telephone pole, pipeline, conduit, sewer, roadway, or other utility must be removed or relocated, the Contractor shall advise the engineer who will notify the proper local authority or owner and attempt to secure prompt action.

304 Clearing, Grubbing and Removals

In areas designated to be cleared and grubbed, all trees, stumps, down timber, logs, snags, brush, undergrowth, matted roots, hedges, heavy growth of grass or weeds, fences, debris, rubbish of any nature, natural obstructions and such material which in the opinion of the engineer is unsuitable for the foundation of required structures, shall be removed.

Rip rap or stone/ brick pitching designated for removal from channels shall be dismantled in a manner to salvage all stones/bricks. Stones/bricks from removal of rip rap or stone pitching shall be cleaned or washed and stacked in designated area for reuse in stone/brick lining/ pitching after cleaning and reshaping channel. No separate payment shall be made for cleaning of stone, bricks.

Dismantling for masonry and concrete works shall be treated as single work irrespective of strength and type of materials (brick or stone or plain cement concrete or reinforced cement concrete). Trash-rack structures designated for removal from drainage channels shall be dismantled in such a manner to salvage existing fencing or other reusable materials.

Buildings, structures, foundations, wells, septic tanks, cesspools, and all like in-ground or above grade structures shall be fully demolished within earthworks grading areas. Notwithstanding the above, the roofs of all septic tanks, manholes, etc. shall be removed so that all voids within such structures can be backfilled with approved fill material. Broken concrete, concrete blocks, or other objectionable spoil material which cannot be used in backfill shall be disposed of in designated areas. Such areas will be designated on the construction site in locations not in conflict with future developments.

All holes remaining after the clearing, grubbing and removal operation in embankment areas shall have the sides broken down to flatten out the slopes and shall be filled with acceptable material moistened and properly compacted in layers to the density required in these specifications. The same construction procedure shall be applied to all holes remaining after the clearing, grubbing and demolition operation in excavation areas where the depth of holes exceeds the depth of the proposed excavation.

305 Measurement for Payment

Measurement for clearing and grubbing of area designated and removal of all structures above or below existing ground as required by these specifications, as shown on the Drawings, or directed by the engineer will be on the basis of unit of corresponding items in the Bill of Quantities.

306 Basis of Payment

Payment for removal of all structures above or below ground, as required by these specifications, as shown on the Drawings, or as may be directed by the engineer will be at the contract unit price for each item tendered in accordance with the Bill of Quantities. The Contract price shall be full compensation for all activities required including supply of material, transportation, labour, equipment and incidentals to complete the work in all respect specified otherwise.

400 EARTHWORKS

401 Scope of Works

401.1 General

a) Scope of Application

This section shall apply to the execution of all earthwork, backfilling, filling, and disposal necessary for the construction of all the buildings. Earthwork shall be done according to the dimensions and cross sections of the structure as shown on the Drawings or as instructed by the engineer.

b) Definition of Earthwork Materials

The following definitions of earthwork materials shall apply:

(i) "*Top soil*" shall mean the top layer of soil that can support vegetation. It shall include all turf acceptable for turfing.
(ii) "*Rock material*" shall comprise material, which in the opinion of the engineer can be removed either with drilling and blasting with explosives or continuous manual chiseling or mechanical chipping with pneumatic tools.
(iii) "*Common material*" shall comprise all material that is not classified as rock material. Common material shall include soil mixed with boulders that need not to be blasted.
(iv) "*Suitable Material*" shall mean all excavated material that can be used as construction material in the Works in accordance with these Specifications.
(v) "*Unsuitable material*s" shall mean material other than suitable material. Material from swamps, marshes, bogs, organic material, silt, and clay or their mixture, discarded top soil etc. in general are unsuitable material.

Classification of common and rock material made by the engineer shall be final and binding on the Contractor.

Measurement will be limited to the lines, grades, slopes, and dimensions shown on the drawings or as directed by the engineer.

Original lines and levels of surfaces for measurement of depth shall be determined by Contractor and submitted to the engineer for approval before commencement of excavation and will be arithmetic mean of representative levels taken at suitable intervals prior to the execution of all earthworks.

c) This work generally to be executed by the Contractor shall include the followings:
(i) Structural excavation for foundations
(ii) Segregating good material from structural excavation backfilling and compacting
(iii) Imported filling material as necessary
(iv) Disposal of surplus materials
(v) Filling under slabs
(vi) Anti-termite treatment

d) Standards

Work shall comply with IS 3764: 1992 Excavation Work – Code of Safety, IS 9759: 1981 Guidelines for Dewatering during Construction or equivalent international standards as approved by the engineer.

401.2 Description of the Work

a) Ground Water Level

i) The Contractor shall carry out his own survey on the underground water level and incorporate these survey results into the method statement for Earthworks.

ii) No additional payment will be allowed for any delays, additional work, or additional costs related to any increase, decrease or seasonal changes in the water table level.

b) Working Directions

i) The working methods and equipment for Earthwork shall take into account the nature of soils, and the presence of the water table at shallow depth, and at variable levels in most cases.

ii) When, in the opinion of the engineer, dewatering equipment or pumping is required then the Contractor shall submit a proposal for a suitable dewatering method with analysis for the effect of dewatering to the surrounding area and shall implement this after the approval of the engineer at the cost as stated in the BOQ.

iii) The Contractor shall keep excavations free from all ground, running and surface water at all times. Water from excavations shall not be permitted to flow directly into new drains or other construction work. Where dewatering equipment or pumping is necessary, the material in and around the excavations shall not be disturbed by pumping, and all sumps shall be formed clear of excavations for permanent work.

- *Water pumping at all low points shall be provided continuously until the permanent drainage systems are finished and connected to the drainage network.*
- *Temporary drains shall be built as excavation progresses.*
- *Effective temporary settlement basins shall be installed before the water is drained into recently completed drainage systems.*
- *The drainage network for water coming from the work area, whether it is included in the job-site or downstream, shall be permanently protected against pollution, maintained and kept clean until the end of work.*

iv) Any failure to comply with the preceding rules shall result in the suspension of the part of the works in question by the engineer, and the Contractor shall be responsible for all measures and all costs incurred thereto.

v) The Contractor shall organize each section of the Earthwork in a controlled and efficient manner so as to minimize the exposure of sub grades and bottoms of excavations to the weather.

vi) All excavated material if not used for backfilling shall be carefully removed from the site to a disposal location outside the construction site to be selected by the Contractor.

402 Excavating

402.1 Basic Workmanship for Excavation

a) Disposal of Excavated Materials

Materials arising from the excavations are to remain the property of the Employer. The materials arising from excavations shall be used for the back fill and leveling of the site and only the excess materials shall be removed from the site to a disposal location outside the construction site to be selected by the Contractor only after the approval of the engineer.

b) Benching

Surfaces of excavations with a gradient greater than 1 in 5, which are to receive filling, must have horizontal benches cut to match the depths of compacted layers of filling.

c) Adjacent Excavations

Where an excavation encroaches below a line drawn at an angle of 45° from the horizontal from the nearest formation level of another higher excavation, all works within the lower excavation and backfilling thereto must be completed before the higher excavation is made.

d) Accuracy

Permissible deviations from formation levels:

- *Beneath mass concrete foundations: +/- 25 mm*
- *Beneath ground bearing slabs and reinforced concrete foundations: +/- 15 mm*
- *Embankments and cuttings: +/- 50 mm*
- *Ground abutting external walls: +/- 50 mm, but such as to ensure that finished level is not less than 150 mm below damp proof course.*

e) Formations General

Advance arrangements (minimum 4 working days) must be made with the engineer for the inspection of formations for the following:

- *Foundations*
- *Ground slabs*
- *Roads and Paved areas*
- *Trenches and Chambers*
- *Remove the last 50mm of excavations just before inspection. Trim excavations to required profiles and levels, and remove all loose material.*
- *Unless otherwise instructed, cover formations within 4 hours of inspection with concrete or other specified fill.*

f) Foundations General

Obtain instructions if:

- *A natural bearing formation of undisturbed subsoil is not obtained at the depth shown on the drawings.*
- *The formation contains soft or hard spots or highly variable material.*

g) Foundations In Made Up Ground

Excavate down to a natural formation of undisturbed subsoil. Obtain instructions if this is at a lesser depth than that shown on the drawings.

h) Unstable Ground

Inform the engineer without delay if any newly excavated face will not remain unsupported sufficiently long to allow the necessary earthwork support to be inserted. If the instability is likely to affect adjacent structures or roadways, take appropriate emergency action until instructions are obtained.

i) Recorded Features

Break out old foundations, beds, drains, etc. where and to the extent instructed by the engineer. Seal off drain ends, remove contaminated earth and disinfect as required by the engineer. Backfill as specified.

j) Unrecorded Features

Where old foundations, beds, basements, filling, tanks, service pipes, drains, etc. not shown on the drawings are encountered, obtain instructions from the engineer before proceeding.

k) Existing Watercourses

Existing watercourses which have been diverted and are to be filled must be cleared of all vegetable growth and soft deposits before filling.

l) Excess Excavation

Backfill any excavations taken:

- *Wider than required with the material specified for backfilling.*
- *Deeper than required with well graded granular material or lean concrete mix.*

402.2 Excavations General

a) *Excavation for foundations, ground floor beds, paving, etc. shall be carried out to the dimensions, lines and levels, as indicated on the Drawings. Excavation shall be executed in such a manner that the required final level is reached solely by removal of material. Wherever excavation has been taken below the final level, the Contractor shall fill back to the final level at his own expense, with 'approved materials' to the approval of the engineer. Such 'approved material' may consist of approved granular material or in-situ mass concrete, where so deemed necessary by the engineer.*

b) *Surveys shall be made by the Contractor in the presence of the engineer, of all areas of excavation and filling before any work is carried out under the Contract, and after all excavation and filling work has been completed. When plans or sections prepared from the above surveys have been agreed between the engineer and the Contractor as truly representing the original ground levels and the final levels as required by the Contract, the same shall be signed and become record surveys for the assessment of earthwork quantities.*

c) *The Contractor shall notify the engineer sufficiently in advance of the beginning of any excavation so that the engineer may make cross-sectional elevations and measurements of undisturbed ground. Natural ground or embankment at or adjacent to any structure shall not be disturbed without the permission of the engineer.*

d) *Trenches, foundation pits for structures or structural footings shall be excavated to lines and grades or elevations shown on the Drawings or as subsequently directed by the engineer and shall be of sufficient size to permit placing of structures or structural footings of the full width and length shown.*

e) *In certain instances, elevations of bottoms of footings as shown may be considered as approximate only and the engineer may order, in writing, such changes in dimensions or elevations of footings as may be deemed necessary, to secure a satisfactory foundation.*

f) *Boulders, logs, and any other objectionable material encountered in excavation shall be removed to the disposal area.*

g) *After each excavation is completed, the Contractor shall notify the engineer and no footing, or other material shall be placed until the engineer has approved the depth of excavation and character of exposed foundation material. Any concrete or other work put in before the excavation has been inspected and approved, shall, if so directed by the engineer, be removed at the Contractor's expense.*

h) *The bottoms of excavations shall be cleaned of all loose material and cut to a firm surface, either level, stepped, or serrated as directed by the engineer. All seams or crevices shall be cleaned and grouted and all disintegrated hard material and thin strata shall be removed.*

i) *When the footing is to rest on material other than rock, excavation to final grade shall not be made until immediately prior to placing of concrete foundation or filling.*

j) *When material at the bottom of excavation for foundation is soft or otherwise unsuitable, as determined by the engineer, the Contractor shall remove unsuitable material and backfill with approved granular material placed and compacted in 150mm layers up to foundation elevation.*

k) *The bottom of excavations shall be kept free from mud and water, trimmed clean, protected from the effects of weather and thoroughly compacted and consolidated by approved methods.*

l) *Sub-grades to ground floor concrete beds shall be fully compacted so that the dry densities over 300mm depth shall be at least equal to 95% of the maximum density during the normal Proctor compaction test performed on the excavated material.*

m) *The sub-grades must be accepted by the engineer before any of the layers covering them are placed. The sub-grades shall be covered immediately after their acceptance.*
- *The sub-grade adjustment tolerance shall be +20mm.*

n) *Any traffic threatening to cause deformations of accepted sub-grades shall be forbidden. Suitable protective action such as the following must be implemented:*
- *Organize the site so that materials are supplied without moving over work areas already in place.*
- *Use low-pressure type equipment.*

o) *In case of any damage caused to the sub-grades, this shall be repaired by the Contractor at his own cost.*

402.3 Excavation of Pits and Foundation Trenches

a) Where required by the nature of the materials to be excavated or the nature of the structure to be accommodated, the Contractor shall provide all necessary sheet piling, planking, strutting and shoring required to safely and securely uphold the face of the excavation or any adjacent structures and provide any necessary staging. The Contractor shall be responsible for the design, supply, fixing and removal of all sheets piling and planking and strutting required. The sheet piling, planking and strutting shall be of sufficient strength to resist all anticipated loading, to ensure the safety of the workmen and to prevent damage to any adjoining property. The engineer may direct that such supports be left in position.

b) Alternatively, subject to the prior approval of the engineer and at no additional expense, the face of the excavation may be suitably battered.

c) Foundation trenches and pits shall not be wider than is necessary for the works to be carried out.

d) The bottom of all excavations shall be to the correct levels as shown on the Drawings. Any pockets of soft material or loose rock in the bottom of pits and trenches shall be removed and the resulting cavities and any large fissures filled with concrete. After the placing of any blinding concrete required by the Contract, no trimming of the side faces shall be carried out for 24 hours.

e) The excavation tolerances for foundations with respect to the specified levels shall be –30mm and +10mm.

f) If the Contractor does not comply with this tolerance, he shall execute at his cost the following:
- *Either adjustment by soil removal, or*
- *Filling of excess depths with blinding concrete.*

g) The excavation bottoms shall be adjusted as the excavations are finished. As soon as the bottom is accepted by the engineer, sand gravel filling shall be placed and compacted immediately.

403 Timbering of Foundations

When foundations are to be taken deep, the sides of the trenches shall be protected by erecting tin shoring and structuring. Timbering shall be close or open depending on the nature of the soil and work, arrangement of timbering, sizes and spacing of members shall be as directed by the engineer. Nothing else on his account shall be admissible which required special treatment for purpose of excavation; it shall deem to be excavation in soil. Ordinary pebbles or canker shall be taken as soil for which nothing else shall be paid.

404 Shoring and Protection

Where necessary to do shoring the Contractor shall be responsible for the design of shoring for pre excavation. The engineer must approve the design and shop- drawing of shoring. Shoring shall be sufficient strength to resists side pressure ensuring safety from slips, prevent damage to work and property injured to persons. It shall be removed as directed after all the items for which it is required are completed.

Near towns and all frequented places, foundation pits well pits and similar excavation shall be sequenced and red lights used in night. This should be in the charge of watchman to avoid accidents. Adequate protective measures required for the safety of the excavation, the people working and near foundation trenches, the Contractor should take property and the people in the vicinity. The Contractor shall be entirely responsible for any injury to life and damage to property caused by the negligence accidents due to his constructional operations. No extra shall be paid in this connection unless other.

405 De-Watering

The contractor shall be paid as stated in the bill of quantity for bailing out or pumping out all water, which may accumulate in excavation during the progress of the work either from seepage, springs rain or any other source until otherwise specified in the contract.

Pumping water from any foundation enclosure or trenches shall be generally in such a manner as to precede the possibility of any damage to the foundation trenches, concrete or masonry or any adjacent structures. The excavation shall be kept free from water.

1) During inspection and measurement,

2) When concrete and masonry is in progress and till they come above the natural water level and

3) Till the Engineers consider necessary.

406 Trimming and Leveling

The bottom of all foundation should be trimmed and leveled in accordance with the drawing. Bottom of foundation shall be rammed and watered if dry before concrete is deposited.

407 Disposal

Surplus Subsoil

All excavated subsoil material, as far as suitable, shall be utilized for backfill or embankment. Any excavated surplus subsoil that it not required for backfill or embankment or not required to be retained by the Employer at the construction site shall be removed from the construction site to a disposal site to be selected by the Contractor.

408 Filling

408.1 Filling Generally

a) Hazardous, Aggressive or Unstable Materials

i) Do not import or use fill material which would, either in themselves or in combination with other materials or ground water, give rise to a health hazard, damage to building structures or instability in the filling.

ii) Soluble sulphate content (SO_3) of imported materials for filling under concrete slabs or within 1 m of substructures must not exceed 1g/litre when tested to BS 1377:Part 3, clause 5 using a 2:1 water-soil extract. Submit test reports from an approved laboratory demonstrating the compliance of the proposed material(s).

b) Placing Fill Generally

i) Ensure that excavations and areas to be filled are free from loose soil, rubbish and standing water.

ii) Take all necessary precautions to ensure the stability of adjacent structures. Place and compact fill against structures, membranes or buried services in a sequence and manner, which will ensure stability and avoid damage.

iii) Plant and equipment employed for transporting, laying and compacting material must be suited to the type of material in question.

iv) Lay differing materials separately so that only one type of material occurs in each layer.

c) Benching in Fill

Where, during the progress of the work, the difference in level between adjacent areas of filling exceeds 600 mm, cut into the edge of higher filling to form benches having a minimum width of 600 mm and a height equivalent to the depth of a layer of compacted filling. Then spread and compact new filling to ensure maximum continuity with the previous filling.

408.2 Filling in Making Levels

a) General

i) Select well-graded granular material, arising from the structural excavation or imported material as defined below. Material if excavated, then a sufficient quantity of suitable material should be selected and kept separately. If there is insufficient suitable excavated material, provide the engineer with details and obtain instructions regarding the importation of fill material.

- *Well-graded sands and gravel with a uniformity coefficient of more than 10.*
- *Crushed hard rock or quarry waste (other than chalk).*

ii) Filling shall be compacted to a minimum 95% of maximum dry density based upon ASTM D-698.

iii) Maximum layer thickness for filling shall be 200mm.

iv) Quality of compaction shall be monitored in an independent testing laboratory in accordance with BS1377: Part4; Part5 and Part9 of the 1990 procedures or the relevant Japanese standards or equivalent international standard as approved by the engineer.

b) Protection of Compacted Filling

i) Do not allow construction traffic on compacted cohesive soil filling until the level has been raised not less than 150mm above formation level by properly compacted temporary protective filling.

ii) Remove temporary protective filling from Site before beginning permanent construction.

c) Backfilling in Foundations

i) Under concrete foundation and ground slab or paving unless otherwise shown in the Drawings: Sand Gravel shall be used.

ii) Under grassed or landscaped areas: excavated material laid and compacted in layers not exceeding 300mm thickness.

408.3 Gravel Packing (Boulder and Sand Filling)

a) Material

i) Material shall consist of hard, durable, dense crushed natural rock gravel (gradation 6mm-75mm) with blinding sand, free of dirt, organic matter or other objectionable material.

ii) The modified CBR of the aggregate shall be not less than 95%.

b) Gravel under Concrete

Gravel under foundations shall be a minimum thickness of 300 mm thick. Excavate extra material or increase thickness of filling as instructed by the Engineer.

c) Blinding

i) Surfaces to receive sheet overlays or concrete shall receive sufficient blinding sand, fine gravel, pulverized fuel ash (PFA) or other approved fine material applied to fill interstices and provide a close smooth surface.

ii) Permissible deviations on surface level: +0 / -25mm.

d) Compaction

The compaction of the gravel packing works shall be done using 8-10 ton smooth wheeled roller.

409 Additional Lift

Extra payment shall not be made for extra lift involved, under this item.

410 Measurement and Rates

410.1 Measurement

a) The quantity shall be computed from the Drawings and measurement and payment shall only be against the pay items contained in the Earthwork Section of the Bill of Quantities.

b) Common excavation to reduce levels shall be measured in cubic meters (m^3) the volume computed from the plan area measured from the Drawings; commencement level will be as determined by site survey and finished level as required by the Drawings or the engineer's instruction.

c) Structural excavation shall include pits, trenching and connecting tie beams excavation and shall be measured in cubic meters (m^3). The volume shall be computed net, based upon the net plan area necessary to accommodate the permanent reinforced concrete foundation work as measured from the Drawings and with depths measured from the Drawings or to levels instructed by the engineer.

d) Disposal volume shall be measured in cubic metres as the theoretical difference between total measured excavated volume (including topsoil) and the total measured volume of backfilled topsoil and other excavation.

e) No allowance will be made for bulking.

f) Backfilling and filling to make up levels shall be measured in cubic meters (m^3). The quantity shall be computed net of the finished compacted volume of backfilling required with quantities taken from the Drawings.

g) Gravel packing shall be measured in cubic meters (m^3). The quantity shall be computed net of the finished compacted volume of filling/foundation required with quantities taken from the Drawings.

410.2 Rates

a) The rates shall be full compensation for all plant, materials, labour, equipment, transport, temporary works, establishment charges overheads, and profit required to complete the work described in this Specification.

b) Rates shall include for removal of all water by whichever means necessary.

c) Rates for common excavation shall be deemed to include for:
- *i) Clearing areas of excavation*
- *ii) Forming any trial holes to locate existing services, cables or drains*
- *iii) Excavating and filling by hand or machine*
- *iv) Excavating in any material likely to be encountered including all clays, sands, silts, old foundations, etc.*
- *v) All necessary supports and protection to uphold and maintain sides of excavation and adjacent structure*
- *vi) All required additional volume or working space including any additional volume of excavation, backfilling, filling, disposal and all other additional cost associated therewith.*
- *vii) Protection*

d) Rates for structural excavation shall be deemed to include for:
- *i) Forming trial holes to locate existing cables or drains.*
- *ii) Excavating by hand or machine*
- *iii) Excavating in any materials likely to be encountered, including all clays, sands, silts, rocks, boulders or old foundations etc.*
- *iv) All necessary supports and protection to uphold and maintain sides of excavation and adjacent structure.*
- *v) All required additional volume or working space including any additional volume of excavation, backfilling, filling, disposal and all other additional cost associated therewith.*
- *vi) Protection*

e) Rates for disposal shall be deemed to include for:
- *i) Additional volume of bulking*
- *ii) Any multiple handling that may be required*
- *iii) Depositing carefully in designated locations as instructed by the engineer.*

f) Rates for backfilling and filling to make up levels shall also be deemed to include for:
- *i) Purchase and transportation to site for materials obtained off-site*
- *ii) All multiple handling*
- *iii) Selecting suitable material*
- *iv) Earthwork support*
- *v) Placing and consolidating in layers*
- *vi) Finishing*
- *vii) Protection*

g) Rates for gravel packing shall also be deemed to include for:
- *i) Placing and consolidating in individual pieces or in layers as appropriate*
- *ii) Formwork and finishing*
- *iii) Protection*

2. CEMENT CONCRETE WORK

501 Scope of Works

This section covers the supply of materials, mixing, placing and testing of concrete used in various works such as plain cement concrete, reinforced cement concrete, pre-cast concrete, plum concrete and curing as specified.

502 Materials and Storage

502.1 Cement

Cement used for concrete shall be any of the Portland cement conforming to the requirements of NS 49-2041.

Cement, which is stored on site, shall be kept in a room that provides adequate protection against moisture and other factors which may promote deterioration. Cement shall not be kept in storage for longer than six weeks without the engineer's permission and different brands and/or lots of the same brand shall be stored separately.

When the cement is supplied in bags, they shall be closely and neatly stacked off on timber planks 150mm to 200 mm clear from the floor to a height not exceeding 12 bags and shall be arranged so that they can be used in the order in which they were delivered to the site. The gap between each bag of stacked cement shall be minimum 30 cm in order to circulate air.

Table 500.1: Requirements on the Physical Characteristics of Cement

S.	Physical characteristics	OPC/PSC	HSPC	Test Procedure
i)	Fineness, m^2/kg: (by Blaine's Air Permeability	225	225	IS-4031 Part 2
ii)	Setting Time: (a) Minimum Initial Setting Time (minutes) (b) Maximum Final Setting Time (minutes)	 45 600	 45 600	 IS 4031 Part 5
iii)	Soundness by Lechatelier method, mm, maximum	10	10	IS 4031 Part 3
iv)	Compressive Strength: Minimum Average Compressive Strength of three mortar cube(N/mm^2) (a) 3 days (b) 7 days (c) 28 days	 16 22 33	 27 37 53	 IS 4031 Part 6

502.2 Aggregates

Both course aggregates (stone) and fine aggregates (sand) shall comply with the requirements of IS: 383-1970 subject to the following:

i) The flakiness index of coarse aggregates shall not exceed 30.

ii) All aggregates shall not contain any deleterious materials.

iii) If there is a potential risk of alkali reaction to the aggregate the engineer's decision as to the suitability of the aggregate shall be final and binding.

iv) The ACV as determined in according with BS 812: Part 3 shall not exceed 28%.

v) The crushed aggregate shall have a percent of wear not more than 30% at 500 revolutions under LA abrasion test, as determined by AASHTO T 96.

vi) The crushed aggregate shall not show evidence of disintegration nor show a total loss greater than 5% when subjected to 5 cycles of the sodium sulfate accelerated soundness testing AASHTO T 104.

Aggregates of different nominal sizes shall be stored separately and in such a way that segregation is avoided. Intermixing of different materials and contamination by foreign matter shall be avoided at all times.

Table 500.2: Tests Procedures Applicable to Stone Aggregate and Fillers

Tests	Test Procedure	
Determination of:		
i) Particle Size Distribution(Gradation)	IS 2386	Part 1
ii) Clay, Silt, Dust in Aggregates	IS 2386	Part 2
iii) Flakiness index	IS 2386	Part 1
iv) Specific Gravity	IS 2386	Part 3
v) Moisture Content	IS 2386	Part 3
vi) Bulk Density, Voids & Bulking	IS 2386	Part 3
vii) Soluble Chloride Content	BS812	Part 117
viii) Mica Content	Manual mineralogical counting	
ix) Water Absorption	1S2386	Part 3
x) Crushing Ratio	Manual counting	weighing
xi) Los Angeles Abrasion	IS 2386	Part 4
xii) AIV - ACV	IS 2386	Part 4
xiii) Polished Stone Value	IS 2386	Part 4
xiv) Degradability Test	NFP94-067	
xv) Sodium Sulphate Soundness	IS 2386	Part 5
xvi) Alkali Aggregate Reactivity Test	IS 2386	Part 7
xvii) Deleterious Substances	IS 2386	Part 2
xviii) Sand Equivalent	IS 2720	Part 37
xix) Crushing Strength of stone	IS 2386	Part 4

502.3 Water

Water shall be clean and free from detrimental concentration of acids, alkalis, salts, and other organic or chemical substances. If the water used is not obtained from drinking water source the engineer may require the Contractor to have the suitability of the water proved by tests carried out by an approved laboratory. Such tests shall comply with the requirements of IS: 3029-1964.

502.4 Microsilica® / Silica Fume

Silica Fume/ Microsilica® shall conform to ASTM C 1240-03 like A&A Microsilica, Elkem,Microsilica® Grade 920 D and shall have the properties mentioned as under:

Mandatory chemicaland physical requirements	**American ASTM C 1240 - 01**	**European prEN 13263 - 1**	**Canadian CAN/CSA A23.5 - 98**	**Japanese JIS A6270:2000**	**Chinese GB/T 18736-2002**	**BrazilianNBR 13956:1997**	**Korean KSF 2567**	**Indian**
SiO_2(%)	>85.0	>85	>85	>85	>85	>85	>85	>85

SO_3(%)		<2.0	<1.0	<3.0			<3.0	
Cl(%)		<0.3		<0.1	<0.2		<0.3	
FreeCaO(%)		<1.0		<1.0				
MgO(%)				<5.0			<5.0	
FreeSi (%)		<0.4						
Available alkalis(Na_2Oequivalent,%)	Report					<1.5		<1.5
Moisture(%)	<3.0			<3.0	<3.0	<3.0		<3.0
LossonIgnition(%)	<6.0	<4.0	<6.0	<5.0	<6.0	<6.0	<5.0	<6.0
Specificsurface(m^2/gram)	>15	15 - 35		>15	>15		>15	
Bulkdensity,undensified	Report							
Pozz.ActivityIndex(%)	>105 at 7 d. accel. curing			>95 at 7 d. >105 at28 d. std.curing	>85 at 28 d. std curing			
Retainedon45 micronsieve (%)	<10		<10			<10	<5.0	<10
Variation from avg. retained on45micron(%-points)	<5							
Density(kg/m^3)	Report							
Autoclaveexpansion(%)			<0.2					
Foaming			No foam					
Dry mass (% - points deviation fromdeclared in slurry)		<2						
Waterrequirementratio(%)					<125			

502.5 Concrete Quality

Table 500.3 Concrete Quality

A-1	**Stipulations for Proportioning**			
1	**Grade Designation**	**M20 (1:1.5:3)**	**M25 (1:1:2)**	**M35**
2	Type of Cement	OPC 53 grade confirming to IS-12269-1987	OPC 53 grade confirming to IS-12269-1987	OPC 53 grade confirming to IS-12269-1987
3	Maximum Nominal Aggregate Size	20 mm	20 mm	20 mm
4	Minimum Cement Content	250 kg/m^3	310 kg/m^3	425 Kg/m^3
5	Maximum Water Cement Ratio	0.5	0.45	0.4
6	Workability	25 mm (Slump)	50-75 mm (Slump)	100 mm (slump)
7	Exposure Condition	Normal	Normal	Normal
8	Degree of Supervision	Good	Good	Good
9	Type of Aggregate	Crushed Angular Aggregate	Crushed Angular Aggregate	Crushed Angular Aggregate
10	Chemical Admixture Type	Superplasticiser Confirming to IS-9103	Superplasticiser Confirming to IS-9103	Superplasticiser Confirming to IS-9103
A-2	**Target Strength for Mix Proportioning**			
1	Target Mean Strength	30N/mm^2	36N/mm^2	43.25N/mm^2
2	Characteristic Strength @ 28 days	20N/mm^2	25N/mm^2	35N/mm^2
A-6	**Proportion of Volume of Coarse Aggregate & Fine Aggregate Content**			
1	Vol. of C.A. as per table 3 of IS 10262	62.00%	62.00%	62.00%
2	Adopted Vol. of Coarse Aggregate	65.00%	62.00%	62.00%
3	Adopted Vol. of Fine Aggregate (1-0.65)	35.00%	38.00%	38.00%

The following items shall be issued to describe the class of concrete required:

i) Ordinary structural / Mass Concrete

This is concrete of any class, which is used, in reinforced, pre-stressed, plain concrete construction including prefabrication with:

- Portland cement complying with the requirements of NBSM 49-2041.
- Aggregates from natural sources, complying with IS 383-1970.
- Water which is clean and free from harmful matter and complying with IS 3029-1964.
- Any kind of admixtures, if required.

503 Materials Measurement for Concrete Batching

503.1 Cement

Where cement is supplied in standard bags the bags shall be assumed to contain 50 kg. All cement taken from bulk storage containers and from partially used bags shall be batched by mass, to an accuracy of within 3 percent.

503.2 Water

Mixing water for each batch shall be measured, either by mass or by volume to an accuracy of within 3 percent.

503.3 Aggregates

All aggregates shall be measured separately be mass, except as otherwise provided in this Clause, to an accuracy of within 3 percent. Volume batching shall not be permitted for concrete grade M20 and above.

Batching boxes for volume batching shall be filled without tamping, ramming, or consolidation of any kind (other than that occurring naturally during the filling process), and shall be screed off level with their topmost edges. Any adjustment of the volume shall be made by supplementary containers of a suitable size. Adjustments by the incomplete filling of batching boxes shall not be permitted.

Fine aggregate shall be tested for bulking at the beginning of and half way through each concreting shift and adjustment shall be made to the batch volume to give the true volume required.

The measurement of cement in gauge boxes will not be permitted and volume batching shall be planned to use whole bags of cement.

503.4 Admixtures

Any solid admixtures to be added shall be measured by mass, but liquid or paste admixtures may be measured by volume or mass. The quantity shall be measured to an accuracy of within 5 percent.

503.5 Silica Cement Admixture

Silica Cement Admixture shall be white amorphous substance having particle size of 0.4 micron with specific surface area of 6000 cm^2/gram obtained from natural volcanic ash containing silicon dioxide above 85% (SiO_2) as chief ingredient.

503.6 Adjustment of Mix Proportions

During production adjustments of mix proportions may be made in order to minimize the variability of strength and to approach more closely the target mean strength. Such adjustments are regarded as part of the proper control of production but the specified limits of minimum cement, content and maximum water/cement ratio shall be maintained. Changes in cement content shall be declared. Such adjustments to mix proportions shall not be taken to imply any change to the current margin.

504 Mixing

504.1 General

An experienced operator shall conduct mixing of material for concrete. Unless otherwise approved, mixing shall be carried out in a mechanical batch mixer of approved type and capable of producing a uniform distribution of ingredients through the batch. Calibration of the weighing mechanism of any batching plant shall be carried out on site in the presence of the engineerprior to start of production and at such intervals as the engineer may determine.

504.2 Charging the Mixer

The engineer shall approve the sequence of charging and, unless otherwise instructed, the same sequence shall be maintained. The volume of the mixed material per batch shall not exceed the manufacturer's rated capacity of the mixer.

504.3 Mixing and Discharge

The period of mixing shall be measured from the time when all materials are in the drum until the commencement of discharge. The mixing period shall be 90 seconds and may only be reduced if, on the basis of site tests, the engineer is satisfied that the reduced mixing time will produce concrete having essentially the same strength and uniformity as concrete mixed for 90 seconds.

The reduced mixing time shall be, however, not less than 50 seconds or the manufacturers recommended mixing time, whichever is the greater. A suitable timing device shall be attached to the mixer to ensure that the maximum mixing time is complied with.

The first batch to be run when starting with a clean mixer shall contain only 2/3 of the required amount of coarse aggregate to facilitate "coating" of the mixer drum.

Discharge shall be so carried out that there is no segregation of the materials in the mix. The mixer shall be emptied completely before it is recharged.

504.4 Maintenance and Cleaning of the Mixer

If the mixer has stopped running for any period in excess of 30 minutes, it shall be thoroughly cleaned out, particular attention being paid to the removal of any build up materials in the drum, in the loader, and around the blades or paddles. Worm or bent blades and paddles shall be replaced. Before any concrete is mixed, the inner surfaces of the mixer shall be cleaned and all hardened concrete shall be removed.

504.5 Stand by Mixer

When casting sections where it is important that casting should continue without interruption a standby mixer shall be held in readiness to run on 15 minutes notice in case of breakdown of the stock mixer.

505 Placing & Compaction

505.1 General

Concrete shall be transported and placed in a manner that will prevent segregation, or loss of constituent materials and contamination. Concrete shall not be placed in any part of the works until the engineer's approval has been given. If concerting is not started within 24 hours of approval being given approval shall again be obtained from the engineer.

Concreting operations shall only be carried out during daylight hours unless proper lighting arrangements have been made and lights are in working order by noon. Workman shall but be allowed to work double shifts and the Contractor shall provide a fresh team for nightshifts.

The placing and compaction of concrete shall at all times be under the direct supervision of an experienced concrete supervisor. The slump measured at site shall have following values.

- Mass Concrete < 50 m
- Structural Concrete (dimension <50cm) < 70 mm
- Underwater Concrete < 100 mm

Once concreting has begun it shall be carried out in a continuous process between construction joints. Concrete shall be placed within 15 minutes from completion of mixing and within one hour from the start of mixing. All excavations and other contact surfaces of an absorbent nature such as timber formwork shall be damp but no free water shall be permitted to remain on these surfaces. The formwork shall be cleaned internally.

505.2 Placing

Weather possible concrete shall be deposited vertically into its final position. Where chutes are used the length and slope shall be such as not to cause segregation and suitable spouts or baffles shall be provided at the lower end to prevent segregation. This displacement of concrete by vibration instead of direct placing will not be allowed.

Concrete shall not be allowed to fall freely through a height of more than 1.5m. Fresh concrete shall not be placed against concrete that has been in position for more than 30 minutes unless a construction joint is formed.

Pumping of concrete shall be subject to the approval of the engineer. Aluminum pipes shall not be used for this purpose.

505.3 Placing Under Water

Normally concrete shall only be placed in the dry. Placing under water shall be allowed only exceptional circumstances where in the opinion of the engineer it is not feasible to water before placing. No concrete shall be placed in flowing water. Underwater concrete shall be placed by means of tremies. Full details of the method proposed shall be submitted in advance to the engineer for his approval. Placing by skip or pipeline will also be considered in certain circumstances.

During concreting by tremies, air and water must be excluded from the tremies by keeping the pipe filled with concrete at all times. In charging the tremies a plug formed of suitable paper of sacking shall be first inserted in the top of the pipe. Once concreting has begun the discharge end of the tremies shall be kept well below the surface of the concrete. Should this seal be broken the tremies shall be lifted and plugged before concerting is recommenced. Distribution of concrete by lateral movement of the tremies will not be permitted.

During and after concreting under water, pumping or dewatering operations in the immediate vicinity shall be suspended until the engineer permits them to be continued.

The concrete mix used for under water placing shall be specifically designed and approved for this purpose to ensure good flow ability, plasticity and cohesion. Increased sand and cement contents over normal mixes will usually be required.

505.4 Compaction

Concrete shall be fully compacted by approved means during and immediately after placing. It shall be thoroughly worked against the formwork around the reinforcement, tendons, ducts and embedded fittings and into corners to form a solid mass free from voids. The concrete shall be free from honeycombing and planes of weakness and successive layers of the same lift shall be thoroughly bonded together.

The concrete shall be compacted by means of vibration as approved by the engineer. Internal vibrators shall be capable of not less than 10,000 cycles per minute and external vibrators not less than 3,000 cycles per minute. Sufficient standby vibrators in working condition shall be held available in case of breakdown.

Vibrators shall be applied by experienced labour and over vibration resulting in segregation, surface water and leakage shall be avoided. Contact with reinforcement and formwork shall as far as practicable be avoided when using internal vibrators. Concrete shall not be subjected to disturbance by vibration within 4 to 24 hours after compaction.

Whenever vibration is applied externally, the design of the formwork and positioning of vibrator shall be such as to ensure efficient compaction and avoidance of surface blemishes all subject to prior approval of the engineer.

Special attention shall be given to the compaction of concrete in the anchorage zones and behind the anchor plates and in all places where high concentrations of reinforcing steel or cables occur.

In such cases where the placing and compaction of concrete is difficult a mix containing small size aggregate may be used but only with the approval of the engineer and after a mix containing such aggregate has been designed and tested.

506 Cutting & Protection

Formwork shall be retained in position for the appropriate times as given in Table 500-5 and, as soon as practicable in the opinion of the engineer, all exposed concrete surfaces shall be protected from loss of moisture by one or more of the following methods:

a) Ponding the exposed surfaces by means of water, except where atmospheric temperatures are low i.e. less than 5°C.
b) Covering with sand, or mats made of moisture retaining material and keeping the covering continuously wet.
c) Continuous spraying of the whole area of the exposed surfaces with water (only on surfaces where Ponding or sand cover is not possible).
d) Covering with waterproof or plastic sheeting firmly anchored at the edges.

507 Adverse Weather Conditions

507.1 Cold Weather

Concrete shall not be placed during falling temperatures when the ambient air temperatures falls below 7°C or during rising temperatures when the ambient air temperature is below 3°. When placing concrete at air temperature below 5°C the concrete temperature shall not be below 10°C.

The temperature of placed concrete shall not be allowed to fall below 50 until the concrete has attained strength of at least 5 MPa and the Contractor shall be responsible for all protective measure necessary to ensure this. All concrete that has been damaged by frost or the formation of ice in the concrete shall be removed and replaced by the Contractor at his own expense.

507.2 Hot Weather

When the ambient air temperature exceeds 32°C during a concreting operation the Contractor shall take measure approved bythe engineer to control the temperature of the concrete ingredients so that the temperature of the placed concrete does not exceed 25°C. Such measures will include spraying aggregate stockpiles with water to promote cooling down by evaporation and where feasible shading of stock pipes and the area where concreting is carried out. Curing shall commence immediately after placing of the concrete to prevent excessive moisture loss.

508 Pipes & Conduits

No pipes and conduits other than those shown on the drawings shall be embedded in the concrete without the engineer's approval. The clear space between such pipes or any reinforcement shall be at least 40 mm or the maximum size of the aggregate plus 5 mm whichever is the greater. The amount of concrete cover over pipes and fittings shall be at least 25 mm.

The ends of all ferrules used for bracing formwork shall be neatly finished off the details shown on the Drawings. Where no details are given on the Drawings ferrules shall be cut back and the holes filled in with mortar and finished off flush with the concrete surface.

509 Applied Loading

No load shall be applied to any part of a structure until the specified curing period has expired, and thereafter, applied loading shall only be allowed after approval by the engineer. The engineer’s decision will be based on the type of load to be applied, the age of the concrete, the magnitude of stress induced and the propping of the structure.

No structure shall be opened to traffic until test cubes made of the concrete in all parts thereof have attained the specified minimum 28-day strength.

510 Testing & Quality Control

The Contractor's minimum obligations for testing and quality control in concrete work shall be the following:

510.1 Testing of Aggregates

Coarse aggregates shall be tested for grading once for every 6 m³ delivered on site and fine aggregate once for every 5 m³ delivered, or more if considered necessary by the engineer.

510.2 Testing of Concrete

Normal and Accelerated Strength Tests.

Testing of 28 day crushing strength of concrete shall be controlled not less than the following frequencies:

Volume of lot	No. of tests per lot
< 75 m³	3
75-150 m³	4
> 150 m³	5

A test shall be the average test value for three cubes prepared from the same batch of concrete, the samples being consolidated in the moulds by Roding as per BSI 1881.

In the case of major structures the Contractor is advised to carry out regular accelerated compressive strength tests in order to predict the 28 days compressive strength of concrete. The methods of testing and predicting 28 day strengths shall be as determined in consultation with the engineer. Whenever accelerated tests indicate that the 28 day strengths will not be obtained to Contractor shall immediately effect such changes in materials and mix proportions as may be necessary to ensure future compliance.

When specified on the drawings the use of accelerated tests shall be obligatory.

a) Control Charts: The Contractor shall institute a system of control charts depicting tests results of all concrete 28 day strength and where applicable accelerated crushing strengths.

b) Provision of Records: The Contractor shall maintain written records that provide the following:

- Date on which each section concreted, class of concrete, time was taken to place, the position of the section in the works.
- Materials consumed
- Daily maximum and minimum temperature
- Nature of samples and dates on which they were, including identification makes.
- Results of tests on samples taken and description of concrete section represented by samples.

These records shall be maintained in a form agreed to by the engineerand shall at all times be up to date and available to the engineer for inspection.

511 Procedure in the Event of Failure

Any concrete represented by test cubes failing to meet the criteria specified for the characteristic strength shall be rejected, or,

a) The Contractor may apply for resubmission of the concrete in question on the basis of cores drilled to the approval of the engineer. The method of taking cores, testing them and evaluating the test results, shall be as instructed by the engineer. The

procedure for determining compliance of test results shall be as specified bythe engineer. The costs of drilling and testing the cores shall be for the Contractor's account regardless of the outcome of the tests on the cores. Before cores are taken, the members concerned shall be cured and allowed to age to at least 28 days but not more than 56 days.

b) Where the engineer so directs full-scale load tests shall be carried out accordance with his requirements to determine whether any structure or member can be accepted. The cost of such test shall be for the Contractor's account regardless of the outcome of the tests.

In all cases where concrete that fails to meet the requirements for strength has been produced the Contractor shall immediately take the required remedial action by changing the mix proportions to obtain the required strength.

512 Steel Reinforcements

512.1 Materials

The steel used for reinforcement shall be Thermo-mechanically treated (TMT) Bars with 0.2 Per cent Proof stress/ yield stress, Min, N/mm^2.

The minimum tensile strength shall be 10 Per cent more than the actual 0.2 per cent proof stress/yield stress but not less than 565.0 N/mm^2.

It shall have 16.0 elongation, per cent, Min. on gauge length 5.65 A, where A is the cross-sectional area of the test piece.

TMT bars shall conform to IS 1786 pertaining to Fe 500 D as specified.

It shall have no crack, scale or rust. Binding wire used to bind reinforcements shall be annealed galvanized binding wire of 20 gauge.

512.2 Binding

Bar steel reinforcement shall be bent cold to the forms and dimension shown on the drawings and in accordance with IS 2502. No heating will be allowed to facilitate bending. No welding or flame cutting will be allowed. Cold worked and hot rolled bars shall not be straightened or bent again once they have been bent.

512.3 Fixing

Reinforcement shall be clean and free from loose mill scale, rust, oil, grease, tar, paint mud, ice, retarders, concrete droppings and contamination by salts or other deleterious matter and shall be maintained in such condition up to the time of concreting.

Reinforcement shall be placed in accordance with the drawings and shall be supported and maintained in position by the provision of wire ties or clips at its correct position.

Spacers shall be securely fixed to the reinforcement at the time of placing concrete. Spacers shall be of cement mortar of the same strength as the concrete, or other approved material. Plastic spacer blocks shall not be used in the works. Effective measure shall be adopted to ensure that reinforcement remains accurately in position during the placing, compaction and setting of the concrete.

In slabs provide with two or more layers of reinforcement, the parallel layers of steel shall be supported in position by the use of steel chairs. Spacers shall be placed at each chair to support layers of reinforcement from the concrete carpet of formwork.

Reinforcement projecting from work already concreted shall not be bent out of its correct position for any reason and shall be protected from deformation or other damage. Except where otherwise shown on the drawing the length of lap joints shall be not less than 57 times the diameter of the larger bar.

Fabric reinforcement when laid adjacent to other sections of reinforcement or when lapped shall have a minimum lap of 300 mm for the main wires and 150 mm for the transverse wires. The use of off-cuts will not be allowed.

Except where otherwise shown on the drawings the concrete cover to the nearest reinforcement exclusive of plaster or other decorative finish and concrete binding shall be within 5 mm of the following.

a) For external work and for work against earth faces in liquid retaining structures - 50 mm,
b) For internal work in non-liquid retaining structures: like, beams and columns - 50 mm to the main steel and in no place less than 50 mm to the bar nearest the outside wall and slab reinforcement - 25mm to all bars or the diameter of the largest bar whichever is the greater.

The distance between any two parallel bars shall not be less than 25 mm or the diameter of the larger bar.

No concreting shall be commenced until the placed reinforcement has been inspected and approved. 48 hour notice shall be given to the engineer prior to any such inspection being required.

512.4 Testing

The contractor shall submit to the engineer, sample of reinforcement bar brand intended to be used for independent testing of Tensile Strength. And, in case the test result is acceptable, and material is approved by the engineer, The contractor may procure the approved material provided manufacturer's test certificate conforming to the specification for the lot is submitted to the engineer who reserve the authority to test each lot in case of suspect quality.

513 Plum Concrete

513.1 General

This work may be required to provide lining of drains and drainage structures or other works as specified by the engineer.

513.2 Materials

Ordinary Portland cement used shall conform to NS 49-2041.

Aggregates shall confirm to IS 383-1970

Water shall conform to IS 3025-1964.

Stone shall be of good, hard, durable quality, uniform in texture and free from iron bands, spots, sand holes, flaws, and other imperfections.

513.3 Composition

Composition of plum concrete, in general, will be 70 percent of concrete by volume and 30% percent stone of 100 mm. average size. The grade of concrete shall be as specified in the Contract. About 3% non-shrinking agent by weight of cement shall be added to concrete at the time of mixing.

513.4 Workmanship

The concrete for this work will need materials as specified in section 502.

Concrete will be prepared on a hard flat platform/space free from organic matter, oils. Soils and other materials detrimental to concrete, by mixing aggregates and cement in dry condition and then water will be added and mixture will be thoroughly worked to achieve proper workability and consistency. The concrete will be transported and placed within initial setting time of about 30 minutes at the place specified. The place or space to be filled with the concrete must be cleaned properly and chipped if possible so as to provide adhesion.

Clean stone of 100 mm size will be hand placed in the concrete during placing and tamped so that the boulders are surrounded completely on all sides by at least 100 mm thick concrete.

513.5 Mock-up

Prior to commencement of plum concrete the Contractor shall construct a plum concrete panel of approximately 2000 mm x 1000 mm for inspection and approval of engineer. The thickness of mock-up shall be according to use of plum concrete in designated work.

514 Curing Of Concrete

514.1 General

Concrete shall be protected during the first stage of hardening from loss of moisture and from the development of temperatures differentials within the concrete sufficient to cause cracking. The methods used for curing shall not cause damage of any kind to the concrete.

Curing shall be continued for as long as may be necessary to achieve the above objectives but not less than seven days or until the concrete is covered by successive construction whichever is the shorter period.

The above objectives shall be dealt with in Sub-clauses 515.2 and 515.3 but nothing shall prevent both objectives being achieved by a single method where circumstances permit.

The curing process shall commence as soon as the concrete is hard enough to resist damage from the process. In the case of large areas or continuous pours, it shall commence on the completed Section of the pour before the rest of the pour is finished.

514.2 Loss of Moisture

Exposed concrete surfaces shall be closely covered with impermeable sheeting, properly secured to prevent its removal by wind and the development of air spaces beneath it. Joints in the sheeting shall be lapped by at least 300 mm.

If it is not possible to use impermeable sheeting, the Contractor shall keep the exposed surfaces continuously wet by means of water spray or by covering with a water absorbent material which shall be kept wet, unless this method conflicts withSub-clause 515.3.

Water used for curing shall be of the same quality as that used for mixing.

Formed surfaces may be cured by retaining the formwork in place for the required curing period.

If instructed by the engineer, the Contractor shall, in addition to the curing provisions set out above provide a suitable form of shading to prevent the direct rays of the sun reaching the concrete surfaces for at least the first Sixdays of the curing period.

514.3 Limitation of Temperature Differentials

The Contractor shall limit the development of temperature differentials in concrete after placing by any means appropriate to the circumstances including the following:

(a) Limiting concrete temperatures at placing as set out in Clause 507;

(b) Use of low heat cement for mass concreting, subject to the agreement of client;

(c) Leaving formwork in place during the curing period. Steel forms shall be suitably insulated on the outside;

(d) Preventing rapid dissipation of heat from surfaces by shielding from wind.

515 Formworks

515.1 General

This work includes design, supply of timber scantlings, planks, GI sheets or steel forms, nails, nut-bolts, steel sections, erection or staging/scaffolding, propping, supports, fixing true to lines, levels and configuration, finishing exposed concrete surfaces after removal if found defective, control and removal of water, dismantling and finally removal of staging/scaffolding, centering and shuttering works.

The Contractor shall be responsible for the design of formwork. Formwork shall be constructed to attain the required surface textures of the structures and be such that it remains rigid and grout leak or loss shall not occur during the placing the setting of the concrete.

Formwork shall be fixed in perfect alignment and to the true shape and dimensions of the permanent work shown on the Drawings. A method of support, which would result in holes or tie wires extending through the full width of a member, will not be permitted. No deformation of the formwork will be allowed of the formwork whilst filling and full of concrete. Top formwork is to be provided to concrete faces where the slope exceeds one in four.

Before each concreting operation is commenced formwork shall be cleaned out of all rubbish, pieces of tying wire and water and the concrete contact faces of the formwork shall be fixed to ensure that no release agent comes in contact with reinforcement.

No concreting shall be commenced until the erected formwork and reinforcing steel has been inspected and approved. At least 48 hour notice shall be given of this request for inspection. On rejection for any reason a further noticed 48 hours will be required to inspect the rectified errors.

Structural concrete holes left after the removal of ties shall be carefully cleaned out and filled with concrete or mortar of an approved composition.

All exposed arises shall be chamfered 25 mm unless otherwise shown on the drawings. The inside surface of forms shall be coated with an approved material to prevent the adhesion of concrete. Such material shall be applied strictly in accordance with the manufacturer’s instructions and shall not come in contact with the reinforcement or pre-stressing tendons and anchorages. The concrete shall not be marked or stained in anyway.

515.2 Type of Formwork

The following types of formwork will be used:

Type of Formwork	Grade
a. General Concrete work (wall/column footing, foundation bed pre-cast, terrace concrete, etc.)	A
b. Structural concrete work (dimension<50cm) for column, beams, slabs, etc.	B

515.3 Removal of Formwork

The Contractor shall give 24 hour notice of his intention of striking any formwork. Forms shall be removed without shock vibrations or other damage to the concrete.

Great care shall be exercised during the removal to avoid shocks or reversal of stress in the concrete. Formwork shall remain in place for the appropriate minimum period of time as given in Table 500-5, after placing of concrete. The time at which the formwork is struck remains the Contractor's responsibility.

Table 500-5: Time for Formwork to be in Place

Type of Work	Time for Formwork to be in place	
	Normal Weather (days)	Cold Weather (days)
Beam sides, walls and unloaded columns	1	1.5
Soffits of slabs and beams:		
a. Spans up to 3m	4	7
b. Spans over 3m to 6m		
c. Spans over 6m to 12m	11	17
d. Spans over 12m	14	24
	21	30

Notwithstanding the above the curing of the concrete shall continue for the full prescribed period by a method approved by the engineer.

515.4 Remedial Treatment of Concrete Surfaces

Any remedial treatment to concrete surfaces shall be inspected immediately after the stripping of formwork and shall be carried out within 2 hours. Surface defects such as small areas of honey-combing cavities, large isolated blow holes, broken corner edges, etc., shall be repaired with mortar consisting of a cement and sand ratio equal to that of the concrete being repaired. Under no circumstances will surface repairs be allowed where reinforcing steel is exposed. In this case the Contractor shall put extensive remedial works, such as demolition of concrete, forward. The forgoing shall be at the expense of the Contractor only.

515.5 Construction

The tolerance of the finished structures shall be as follows:

Grade A:	Horizontally	± 20 mm
	Vertically	± 10 mm
	Inclination	± 1.4 mm

Grade B: Dimensions of structural member's ± 10 mm, except for slab thickness and edge beams, where ± 5 mm is maximum.

516 Measurement for Payments

Measurement for payment for concrete, reinforcement and plum concrete shall be in the unit of relevant items of the Bill of Quantities.

All types of concrete (i.e. plain cement concrete, reinforced cement concrete, precast concrete, plum concrete) will be measured in number of cubic meters of finished concrete work to specified line, levels shown on Drawings or as directed by the engineer. Each class/grade of concrete shall be measured separately. No separate measurement will be made for additives and underwater concreting.

Measurement of reinforcement will be in number of kilograms of reinforcement as laid in final position to specified line, level as shown on Drawings or as directed bythe engineer. Overlaps, coupling, spacer, bedding bars shall be included. The weight shall be calculated based on weight per unit length of bar.

Plum concrete work shall be measured in cubic meter of finished work to specified line, level as shown on Drawings or as directed bythe engineer.

Measurement for formwork will be in square meter for area of formwork of different type in contact with concrete work specified and completed.

517 Basis of Payment

Payment will be made at the contract unit rate of all type of concrete, formworks and steel reinforcement works per cubic meter, per square meter and per metric ton or kilograms or as mentioned in the contract unit prices of relevant item in the BoQ(s). This price shall be full compensation for supply of materials, transportation, equipment, tools, scaffolding, labour and incidentals required to complete the respective work as specified. Each type of concrete shall be paid separately.

3. CEMENT PLASTERING & PUNNING WORKS

901 Scope

This Section covers furnishing of materials and construction of different grades of plaster works in accordance with the BOQ, Drawing and this Specification or as directed by the engineer.

Plastering shall be made up of mortar consisting of cement, sand in the different proportion as indicated in the BOQ as specified in the drawing.

902 Material

Cement shall be fresh and free from impurities and as specified in clause 502, river bed sand shall be used. Sand for plastering shall be finer than the sand used for concreting or brick work. Following shall be proportion of different size of grains.

Grain		Percent
0 to 0.5 mm	=	30%
0.5 to 2 mm	=	50%
2 to 3 mm	=	20%

Water shall be clean and free from pollution by soil particles, humus, mud, dirt, natural or vegetable oil, soap and other impurities.

903 Construction Procedures

The surface to be plastered shall be brushed clean mortar joints of brick masonry walls or any other surface to be plastered shall be raked to a depth of approximately 12mm, and the surface brushed down with a stiff brush and thoroughly wetted. The surface shall be free of all dust, loose materials, grease etc.

The mortar shall be first dry mixed, by measuring with boxes to required proportion, and then water added slowly and gradually and mixed thoroughly to uniform consistency.

The thickness of the plaster shall not be less than 12.5 mm. In case of plaster thicker than 20 mm, it shall be built by two or more coats each coat not exceeding 12.5 mm in thickness.

Cement shall be as specified in section 500.

Sand shall be as specified in section 500 but shall be graded to a suitable fineness in accordance with the nature of the plaster, etc., in order to obtain the finish required.

All other mixes shall be constructed in a like manner.

Moist curing shall be accomplished by keeping the plaster uniformly damp by suitable means. Moist curing shall start during application and continue for not less than 7 days.

903.1 Hacking

Prices of all paving and plastering etc. shall include for hacking concrete ceilings, beams, floors etc., by approved means and for raking out joints of walls 12 mm deep to form a proper key. Plastering on walls generally shall be taken to include flush faces of lintels etc., in same.

Surfaces to be paved or plastered must be brushed clean and well wetted before each coat is applied. All cement plaster shall be kept continually damp in the interval between application of coats and for seven days after application of the final coat.

Dubbing out where required shall be composed of similar material to that following.

Partially or wholly set material will not be allowed to be used or re-mixed.

903.2 Samples

The Contractor shall prepare sample square meter of the plastering and paving as directed until the quality, texture and finish required is obtained and approved by the engineer after which all plastering or paving executed shall conform with the respective approved sample. No payment shall be accounted for such sampling.

903.3 Finish

Care shall be taken to ensure that finished plaster surfaces shall be plumb, square, straight and true to line.

Generally, all screeds and paving shall be finished smooth, even and truly level (unless specifically required to falls and currents, etc.), and paving shall be steel troweled or floated.

Rendering and plastering shall be finished plumb, square, smooth and even.

All surfaces to be plastered shall be thoroughly wetted before any plastering is commenced and the Contractor shall allow in his prices for dusting external angles with neat cement to give additional strength.

No plastering will be allowed to take place until all chases for service have been cut, services installed and chases made good. On no account may finished plaster surface be chased and made good.

All Work shall be to approval and any not complying with the above shall be hacked away and replaced, as directed, and at the Contractor's expense.

903.4 Arises and Angles in Plastering

All arises shall be clean and sharp or slightly rounded as directed including neatly forming miters.

All making good shall be cut out to a rectangular shape, the edges undercut to form dovetail key and finished flush with face of surrounding plaster. All cracks, blisters and other defects must be cut out made good and the whole of the paving and plastering Work left perfect on completion.

Screeds shall be in cement and sand (1:4 or 1:3) and rates shall include for thoroughly hacking, cleaning and soaking the receiving structure in water. No screed shall be laid on a dry structure in any circumstances.

Where changes of floor finish occur they shall be divided by strips as specified.

The Contractor's special attention is drawn to the fact that all screeds, immediately after the initial set has taken place, will be required to be continuously covered in water by the sand trap or other approved method for at least 10 days. Any screed panel that is found to be dry before the end of this period shall be removed at the discretion of the engineer.

Waterproofed external rendering shall consist of minimum 12mm cement and sand (1:4 or 1:3) rendering at the rate of 2.05 liter to 41 kgs of cement all in accordance with the manufacturer's instructions and finished perfectly true and even with a wood float.

903.5 External Plastering and Rendering

Waterproofed External Plaster or Rendering work shall consist of minimum 20 mm as detailed in the Bill of Quantity with cement/ sand ratio 1:3 or 4 at the rate of 1/2 gallon to 90 lbs of cement. The plaster work shall be done in two layers: the first layer of the plaster shall be 10 mm thick this surface shall be roughened by scraping using trowel after applying the first layer the plaster shall be cured as instructed by the engineer, the second layer of plaster shall be 10 mm thick this surface shall be smooth and finished perfectly true and even with a wood float and curing shall be done in the second layer as instructed by the engineer. The external plaster shall be in perfect line and level.

903.6 Internal Plastering and Rendering

Internal Plastering or Rendering shall consist of minimum 20 mm as detailed in the Bill of Quantity with cement/ sand ratio 1:3 or 4 at the rate of 1/2 gallon to 90 lbs. of cement. The plaster work shall be done in two layers: the first layer of the plaster shall be 10 mm thick this surface shall be roughened by scraping using trowel after applying the first layer the plaster shall be cured as instructed by the engineer, the second layer of plaster shall be 10 mm thick this surface shall be smooth and finished perfectly true and even with a wood float and curing shall be done in the second layer as instructed by the engineer.

904 Punning And Pointing Works

904.1 Materials

The materials required for punning and pointing works are cement, sand and water and shall be in accordance with the requirements of clause 502.

904.2 Construction Procedures

Before applying the punning and pointing, the base surface shall be cleaned, any dust or loose particles removed and thoroughly wetted. The surface shall be free of all dust, loose materials, grease etc. The average thickness of the punning and pointing work shall not be less than 3 mm. The pattern shall be as per instruction of the engineer or as shown in the drawings.

The mortar shall be first dry mixed, by measuring with boxes to required proportion, and then water added slowly and gradually and mixed thoroughly to uniform consistency.

The coat shall be finished by rubbing with a steel trowel and any depression shall be filled in and rubbed to shining surface.

Cement shall be as specified in section 500.

Sand shall be as specified in section 500 but shall be graded to a suitable fineness in accordance with the nature of the plaster, etc., in order to obtain the finish required.

All other mixes shall be constructed in a like manner.

Moist curing shall be accomplished by keeping the plaster uniformly damp by suitable means. Moist curing shall start during application and continue for not less than 7 days.

905 Measurement

Measurement of works will be made in m^2 of works as specified.

906 Payment

Payment for work will be made on the basis of contract unit price indicated in the BOQ.

The payment will be full and final compensation for all material, transport, labor, equipment, scaffolding and incidentals required to complete the respective work as specified.

907 Wall Care Putty (White Cement Putty)

905.1 Scope of Work

Wall care putty consists of white cement, high quality polymers and specialty chemicals and mineral fillers and is formulated to make it suitable to apply even on damp surfaces. Being cement based putty; it has better compatibility with the base plaster and forms a durable base for paints. It can be applied on both, Interior and exterior plastered surfaces. It is a water resistant base coating to the plastered surfaces to provide fine leveling and a protective base for the surfaces to be painted.

905.2 General

Wall care putty shall have superior water resisting properties to prevent paint from flaking even if the walls are damp. It should fill-up fine pores in walls and ceilings to get the smooth and dry surface for painting. Wall care putty shall have better properties in terms of water-resistance, adhesive strength and durability as compared to the ordinary putties. The putty shall provide a breathable surface and allow any trapped moisture to move out keeping the wall dry and clean.

905.3 Material

Wall care Putty shall be in dry free flowing powder form. Required quantity of Wall care putty shall be procured from the reputed manufacturers or approved manufacturers, or from their authorized dealers.

The putty shall be procured in the form of FINE or COARSE (MATT) finish as specified in the description of the item.

905.4 Preparation of Surface

- Surface should be clean of loose particles, dirt, grease and traces of foreign material. Sand papering or chipping shall be done if so required.
- Loose plastered areas/defective materials shall be removed & surface re-plastered and cracks filled-up properly.
- Uneven ceiling/wall surfaces shall be made even by re-plastering.
- Surface should be pre-wetted prior to application. This helps in providing a strong bond with substrate.

905.5 Mixing

- 12 to 16 litres of clean water shall be required for a bag of 40 kg of wall care putty. Required quantity of putty (which is required to be used at a time) shall be added to the water in right proportion (considering pot life of the mix as 60 minutes).
- Mix shall be stirred continuously by using an electric mixer or by hand to obtain a homogeneous lump-free paste.
- The paste shall be allowed to stand for about 10 minutes for the additives to dissolve.
- The paste shall be re-mixed again for about 2 minutes.
- This mix should be used within 60 minutes.

905.6 Application

- The plastered surface shall be dampened with clean water and excess water shall be allowed to be drained off.
- Using a steel trowel/blade, the above mix shall be applied to a thickness of about 1 – 2 mm. Then the surface shall be leveled and smoothened. This first coat shall be cured lightly after it dries-up.
- Then second coat shall be applied after first coat is fully dried and set. Second coat shall be cured lightly for two days.

- Over plastered / coarse putty substrate, fine wall care putty of about 1 to 1.5 mm thickness shall be applied, to smoothen the surface with a steel trowel. Finished surface of wall care putty shall not require any dressing by Emery Paper but if at all it is done, the paper should not be less than 500 number.
- The thickness of each coat should not exceed 1.5 mm and total wall putty thickness should not exceed 3mm.
- If specified in the description of item, coarse wall care putty of about 6 to 10 mm thickness shall be applied to remove the undulations and level the surface. More number of coats of coarse putty shall be applied to cover up undulations, only after approval of the engineer.
- Coverage of wall care putty depends upon surface quality. However, approximate coverage for fine wall care putty shall be 20-22 sq. ft./kg and for coarse wall care putty, it shall be 9-10 sq. ft./kg.

908 Measurement

Prices of wall care putty shall include for preparation of surfaces, rubbing down between each coat, stopping, knotting, etc., and all other Work in connection as described and as necessary to obtain a first class and proper finish. Price must include for the provision of all necessary transportation, material, scaffolding, plant and tools, labor and incidentals to complete the work as specified.

Measurement of all the painting works will be made in m^2 of works as specified.

909 Payment

Payment for work will be made on the basis of contract unit price indicated in the BOQ.

The payment will be full and final compensation for all material, transportation, labor, scaffolding, equipment and incidentals required to complete the respective work as specified.

4. CSEB specifications

910 Scope

This Section covers the standards and specifications to be met when producing CSEB in the field such as desired material extraction, field tests of the soil, and equipment for producing CSEBs, as well as the required properties of the CSEBs either produced at the site or transported to the site from the manufacturing company, and their storage needs.

911 Material (Soil)

The soil to make CSEBs shall be taken from at least 1.5 m below the ground level. It should be free of top soil and any organic matter.

912 Soil test

Three tests should be conducted at site to find the composition of the soil, assess its suitability for CSEB production and adopt necessary measures to produce CSEB of specifications as mentioned in Section/Clause…The three tests are – i) Simple jar test or similar, ii) Consistency test, and iii) Cohesion test to determine the soil composition, and workability of the soil.

I) Simple jar test

This test is to be conducted to determine the soil composition. For this, a transparent glass or plastic jar with a flat base is taken, into which the soil passed through a sieve 5 or 6 mm is filled until the jar is half full. The water is added into the jar until it is then full. The glass jar is shaken for 1-2 minutes and placed on a flat surface. After about half an hour, the soil is settled, it is then again shaken up well and left to settle overnight. It is helpful to add a little salt (1 teaspoon to the jar because it helps to separate the clay from the sand. The soil then separates out into the layers from which we calculate the approximate percentages of the gravel, sand, clay, and silt content in the soil.

II) Consistency test

A ball of soil approximately 3 cm in diameter and roll it onto a clean flat surface to form a thread. If the thread breaks when it is thicker than 3 mm, the soil is too dry and water is to be added. The thread usually breaks when it is approximately 3 mm thick. After the thread breaks, it is made into a small ball again and crushed between the thumb and the index finger. If the soil crumbles before forming into a ball, it has high silt or sand content. If the ball cracks and crumbles, it has low clay content. And, if the ball is hard to crush and does not crack or crumble, it has a high clay content. If the ball feels spongy, then it contains organic matter.

III) Cohesion test

The soil is to be rolled into a sausage with a diameter of approximately 12 mm. The soil should not be sticky and be possible to roll it into a continuous thread of 3 mm diameter. Starting at one end of the thread, it is carefully flattened between the index finger and thumb to form a ribbon 3 to 6 mm wide. If no ribbon is formed, clay content is negligible. A 5-10cm ribbon shoes low clay content, while 25-30 cm ribbon shows a high clay content.

913 Soil mix

The soil mix for CSEB is composed of soil from site, sand, clay, and cement. The particles of sand greater than 6 mm shall be sieved out. The clay percentage in the soil mix shall neither be less than 10% nor more than 30% to allow binding provided by clay and to prevent shrinkage on drying due to high clay content, respectively. Optimum Moisture Content shall be obtained by adding water until the soil mix just maintains its form when compacting it in the hand. The soil mix shall be prepared in the pan mixer*; hand mix shall not be considered satisfactory*.

The use of additional chemical stabilizer apart from cement to obtain desired compressive strength of the CSEBs shall be deemed prudent by the site engineer or equivalent, as required.

914 CSEB production

Fully or semi-automated hydraulic brick press will be preferred to manual brick press. In either case, the force applied per brick shall not be less than 5 ton per brick. The CSEBs thus produced shall have smooth edges and pertain to the prescribed dimensions. They shall be cured for 28 days in a shaded area, after which random samples of CSEBs shall be subjected to tests as described in Section…

915 Testing of CSEBs

The following 3 lab tests (I-III) and 2(IV-V) field tests are to be conducted for each batch of CSEBs produced, i.e., in one day, while the 3 lab tests (I-III) are deemed sufficient for the CSEBs bought from a verified manufacturer.

I) Compressive Strength Testing (CST)
Three random samples of the bricks thus produced shall be subjected to CST after 28 days of curing and average compressive strength shall be determined for the batch of CSEBs produced. The CST shall not be less than 5 MPa for the CSEBs to be used as infill walls and 7 MPa for the CSEBs to be used as load-bearing walls as in case of the Guard houses.

II) Water Absorption Capacity (WAC) Test
The WAC of the CSEBs produced shall not exceed 15%.

III) Efflorescence Test

IV) Drop Test
When dropping the CSEBs from a height of 1 to 1.2 m, the blocks shall not break into more than 3-5 pieces. If the CSEBs disintegrate into many pieces, it implies the blocks are too soft.

V) Soundness Test
The metallic ringing when striking two CSEBs together is preferred.

916 Storage

The CSEBs thus produced or transported shall be stored in a shaded area, with care about maintaining moisture content.

1300 WATER PROOFING WORKS

1301 Scope

This Section covers furnishing of all materials, labor, tools, and equipment required in undertaking proper application of water proofing works as shown on the Plans and in accordance with the BOQ, Drawing and this Specification or as directed by the engineer.

1302 General

i. Section Includes

A. Furnishing of all labor, materials, services and equipment necessary for the supply and installation of cementitious crystalline waterproofing on concrete structures and surfaces as shown on drawings and as specified in this section.

B. Related Sections:
   1. See Section 03300 - Cast-in-Place Concrete
   2. See Section 07900 – Joint Sealers
   3. See Section 09900 - Paints and Coatings

ii. References

A. ASTM C 109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
B. ASTM C 321 - Standard Test Method for Bond Strength of Chemical-Resistant Mortars.
C. ASTM C 348 - Standard Test Method for Flexural Strength of Hydraulic Cement Mortars.
D. ASTM C 596 - Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement.
E. COE CRD-C 48-92 - Method of Test for Water Permeability of Concrete; U.S. Army Corps of Engineers.
F. NSF/ANSI Standard 61 - Drinking Water System Components – Health Effects (for use of waterproofing material on structures holding potable water).

iii. Submittals

A. General

Submit manufacturer's certification that proposed materials, details and systems as indicated and specified fully comply with manufacturer's details and specifications. If any portions of contract documents do not conform to manufacturer's standard recommendations, submit notification of portions of design that are at variance with manufacturer's specifications.

B. Product Data

Submit manufacturer's descriptive literature and product specifications for each product.

iv. Quality Assurance

A. Manufacturer Qualifications

Company specializing in manufacturing and/or marketing Products specified in this Section with minimum 10 years documented experience.

B. Installer Qualifications

Acceptable to manufacturer with documented experience on at least 5 projects of similar nature in past 5 years and/or training provided by the product manufacturer.

v. Delivery, Storage and Handling

A. Deliver, store off the ground and covered, handle and protect products from moisture in accordance with manufacturer's instructions.

B. Deliver materials in manufacturer's unopened containers, fully identified with brand, type, grade, class and all other qualifying information. Provide Safety Data Sheets for each product.

C. Take necessary precautions to keep products clean, dry and free of damage.

vi. Warranty

Warrant installed waterproofing to be free of leaks and defects for 5 years from date of acceptance, with the exception of structural cracks in the waterproofed concrete which are 0.02" (0.4 mm) or wider or any size dynamic cracks.

vii. System Requirements

A. Coordinate waterproofing work with work of other trades.

B. Provide materials and accessories in timely manner so as not to delay Work.

viii. Project Conditions

A. Maintain surfaces to be waterproofed and surrounding air temperature as well as concrete temperature at not less than 40° F (5 °C) for at least 48 hours before, during and after application of waterproofing.

B. Do not apply materials to frozen or frost-filled surfaces.

C. Exercise caution when temperatures exceed 90 ° F (32 ° C). It may be necessary to apply waterproofing during times when the sun is not at its strongest (i.e. early morning, evening or night).

1303 Products

1303.1 Crystal Coat (For shear walls): Water proofing system for shear walls shall be high performance integral crystalline capillary concrete waterproofing system (Aquafin Latex or Aquafin IC or Equivalent), which is a blend of active chemicals, micro fine cement and treated silica. The application shall be of two coats.

1303.3 Cold Applied Poly Urethane Waterproofing Membrane (For Terraces, Roof and Walls): Water proofing system for terraces, roofs and walls shall be single component cold applied high performance polyurethane waterproofing membrane (Roof Guardi (p) or Equivalent) The application of coating shall be of two coats.

1304 Measurement

Measurement for payments shall be done as indicated in the Bill of Quantities.

1305 Payment

Payment for work will be made on the basis of contract unit price indicated in the BOQ. The payment will be full and final compensation for all material, transportation, labor, equipment and incidentals mentioned above required to complete the respective work as specified.

1306 Two Component Flexible Elastomeric Polymer Modified Cementitious Acrylic Based Water Proofing System (Aquafin 2K/M or Koster NB W233 or Ceresit CR 78

Cementitious composite waterproofing coating system is a flexible elastomeric 2 component polymer modified coating that waterproofs and protects concrete, masonry, brick and some natural stone substrates with crack-bridging properties. The system should exhibit crack bridging up to 2.6 mm excellent bond strength, high wear resistance and chemical resistance with reduced permeability. The material should have UV, weather and freeze thaw resistant .The material should be manufactured by company that manufactures entire range of construction chemicals under compliance of ASTM D 412-98 and EN/DIN.

1303.1.1 General

i. Section Includes

A. Furnish all labor, materials, tools and equipment as necessary to perform Acrylic Latex Modified Cement Waterproofing on new and existing structures as shown on drawings and as specified in this section.

B. Related Sections
1. See section 03300 - Cast-in-Place Concrete

ii. References

A. ASTM C 109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
B. ASTM C 348 - Standard Test Method for Flexural Strength of Hydraulic Cement Mortars.
C. ASTM C 321 - Standard Test Method for Bond Strength of Chemical-Resistant Mortars.
D. ASTM E 96 - Standard Test Method for Water Vapor Transmission of Materials.
E. COE CRD-C 48 - Method of Test for Water Permeability of Concrete; U.S. Army Corps of Engineers.
F. NSF/ANSI Standard 61 - Drinking Water System Components – Health Effects (for use of waterproofing material on structures holding potable water).

iii. Submittals

A. General

Submit manufacturer's certification that proposed materials, details and systems as indicated and specified fully comply with manufacturer's details and specifications. If any portion of Contract Documents do not conform to manufacturer's standard recommendations, submit notification of portions of design that are at variance with manufacturer's specifications.

B. Product Data

Submit manufacturer's literature and installation instructions for each product.

iv. Quality Assurance

A. Manufacturer Qualifications

Company specializing in marketing or manufacturing products specified in this Section with minimum 10 years documented experience.

B. Installer Qualifications

Acceptable to manufacturer with documented experience on at least 5 projects of similar nature in past 5 years and/or training provided by the product manufacturer.

v. Delivery, Storage and Handling

Deliver and store in a dry area between 40^0F (5^0C) and 90^0F (32^0C). Handle and protect from freezing and direct sun light in Deliver materials in manufacturer's unopened containers, fully identified with brand, type, grade, class and all other qualifying information. Provide Safety Data Sheets for each product.

Take necessary precautions to keep products clean, dry and free of damage.

vi. System Requirements

A. Coordinate waterproofing installation with other trades.

B. Provide materials and accessories in timely manner so as not to delay Work.

vii. Project Conditions

A. Maintain surfaces to be waterproofed and surrounding air temperature at not less than 40^0F (5^0C). Apply only when temperatures are steady or rising.

B. Do not apply materials to frozen or frost-filled surfaces.

C. Exercise caution when temperatures exceed 90^0F (32^0C).

viii. Warranty

Manufacturer shall provide standard limited product warranty executed by authorized company official. Term of warranty shall be 5 years from date of Substantial Completion, if Substantial Completion is no longer than 6 (six) months after product application.

1303.1.2 Products

i. Materials

A. Waterproofing Material - Acrylic Modified Cement Waterproofing: Cementitious, two-component, acrylic emulsion based, flexible, crack bridging waterproof membrane barrier against positive water pressure, with the following characteristics:

1. Product: Aquafin 2K/M or Koster NB W233 or Ceresit CR 78
2. Color: Gray or as per color chart
3. Dry Component-A: Precise blend of cementitious material
4. Liquid Component-B: White acrylic emulsion
5. Working Time: Approximately 45 minutes
6. VOC 0 g/L
7. Flammability: (ASTM E-108) Class A – Spread of Flame - Passed
8. Bond/Adhesion: (ASTM C-321) 215 psi (1.5 MPa) @ 28 days
9. Tensile Strength: (ASTM C-412) 600 psi (4.1 MPa) @ 28 days @ 80 mils
10. Elongation: (%) 70 (gray); 40 (white) at 68oF (20oC)
11. Static crack bridging capacity: 1/16-inch (gray) (1.5 mm)
12. Vapor Permeability: (ASTM E-96) 1.4 perms at 3/32" (2.4 mm) thickness
13. Waterproofing: (CRD C 48-92) Withstands 200 psi = 460 feet (14 bar = 140m) hydrostatic pressure (positive side) at 3/32" (2.4 mm) thickness.
14. Potable water certification: NSF/ANSI Standard 61.

1303.1.3 Execution

i. Examination

Examine all construction substrates and conditions under which waterproofing materials are to be installed. Do not proceed with the waterproofing application until unsatisfactory conditions are corrected.

ii. Preparation

A. Protect adjacent surfaces not designated to receive waterproofing.

B. Substrate preparation

1. Remove oil, grease, dirt, loose particles, remains of form oils, water repellents, rust or other coatings by high-pressure water blasting (>3000 psi), wet or dry sand blasting, or other mechanical means to produce surface profile ICRI CSP 3 to 5 for application of waterproofing.
2. Follow manufacturer's instructions to clean and prepare surfaces and seal cracks and joints.
3. Voids in concrete substrates: 1/4-inch (6 mm) diameter and larger, pre-treat with patching compound. Less than 1/4-inch (6 mm) diameter can be filled with a scratch coat of one- component waterproofing material.

C. Rinse surfaces to be waterproofed (excluding drywall or similar) with clean water to saturated surface dry (SSD) condition, with no standing water on horizontal surfaces.

1303.1.4 Installation

A. Mix two-component waterproofing material in proportions recommended by manufacturer.

B. Cavity fill, honeycombs & formtie holes:

1. Fill voids at cleaned and prepared faulty construction joints, cracks, formtie holes, etc. with patching compound in mortar consistency flush to surface.
2. Laminate patching compound in 2 to 3 layers as per manufacturer's instructions for larger spalled or honeycombed areas.

C. Taping horizontal and vertical construction joints and cracks (positive side waterproofing only): Install joint and crack sealing tape, embedded in waterproofing material as follows:

1. Apply two-component waterproofing material by brush in a six to seven inch (15 – 18 cm) wide strip coat centered over all joints, cracks, penetrations and changes of plane to be taped.
2. Immediately, while this coat is still wet, unroll joint sealing tape into the coating, smoothing out wrinkles and fish mouths and press the tape into the fresh waterproofing material.

3. Assure that the tape adheres to the under-laying coat after a waiting period of at least 4 hrs.
4. After testing adhesion apply two-component waterproofing material over the tape.

D. Sealing around PVC pipe penetrations:
1. Abrade (sand) PVC pipes and degrease with isopropanol or acetone.
2. Place sealing gasket over pipe and mark size of penetration, then cut out necessary opening (penetration).
3. Apply one prime coat two-component waterproofing material over concrete and exposed PVC pipe.
4. While this coat is still wet, immediately place and firmly press sealing gasket into the coating.
5. Assure that the sealing gasket adheres to the under-laying coat after a waiting period of at least 4 hrs.
6. After testing adhesion apply two-component waterproofing material over the sealing gasket.

E. Positive Side Waterproofing:
Apply two-component waterproofing material in quantities and number of coats as per manufacturer's specifications and recommendations:

1. Apply at 60 mils or 1/16" (1.5 mm) total thickness for all standard applications (i.e. foot traffic, balconies (non-tiled), etc.) and waterproofing up to 13 ft (4.0 m) water head.
2. Apply at 80 - 90 mils (2.0 - 2.4 mm) total thickness for applications exposed to hydrostatic pressure (>13 ft (>4.0 m) water head), under tiles, plaza decks, etc.

F. Surface Finish:
1. Surface finish shall be standard two-component waterproofing material finish (i.e. brush, trowel, roller or spray finish).

G. Alternative I: Negative Side Waterproofing:
Follow manufacturer's specifications and instructions for below grade structures where infiltration from ground water is expected:

1. Apply base coat one-component waterproofing material at 60 mils (1.6 mm) thickness. Apply in two coats.
2. After 24 hrs waiting period, apply top coat two-component waterproofing material at 60 mils (1.6 mils). Apply in two coats.

H. Alternative II: Horizontal surfaces with protective clear acrylic sealer:
1. 1 coat application: 200 – 300 sq.ft./gal (4.9 – 7.4 m^2/L.
2. 2 coat application: 350 – 450 sq.ft./gal (8.6 – 11.0 m^2/L.

I. Application considerations:
1. Apply, using stainless steel trowel, tampico brush, short nap roller, or appropriate compressed-air spray equipment.
2. Apply only when surface and ambient temperatures are 40°F (5^{0}C) and rising. At high temperatures (i.e. 86^{0}F (30^{0}C) and above) protect application from direct sun and wind to prevent premature surface drying and shrinkage cracks. Apply material in two coats minimum.
3. Application thickness should not exceed 1/8-inch (120 mils (3 mm)).
4. If needed, such as in zones posed to movement or cracking, plaza decks, etc., the waterproofing material can be additionally reinforced with a reinforcing mesh (supplied by waterproofing manufacturer), embedded between two waterproofing layers.
5. Do not bridge cracks greater than 1/16-inch (1.5 mm).
6. Bridge dynamic cracks or joints with elastomeric joint sealing tape, as supplied by waterproofing manufacturer. However, where aesthetics are important use an elastomeric sealant in lieu of the tape.
7. Do not overcoat waterproofing material with solvent-based materials.
8. Where a uniform color is desired (i.e. balconies, walkways, etc.), application of an elastomeric paint or water based acrylic stain is recommended.
9. Prime and protect alkali sensitive metals such as copper, aluminum, galvanized or zinc treated metal first with a primer, before over-coating with waterproofing material. Follow manufacturer's recommendations for primer material.

1303.1.5 Curing

A. Follow manufacturer's general instructions for curing and hardening of waterproofing material. Do not use water for curing. Waterproofing material is self-curing.

B. Protect surfaces from rain, frost and premature dehydration.

1303.1.6 Testing of Water Including Structures

Following application and completion of related work, as required, but well prior to completion of entire project, fill tanks to capacity and allow to be filled not less than 3 days. Fill larger structures at a uniform rate not greater than 6.5 feet (2 m) in 24 hours. The temperature of the fill water shall be plus or minus 10 degrees F of the ambient air and/or the tank structure at the time of filling. Extreme caution is urged if the temperature is greater than 10 degree F. Should leakage occur after this period, drain tanks to perform repairs. Notify Owner prior to draining tanks.

1303.1.7 Acceptance

A. Remove left over materials and any foreign material resulting from the work from the site.

B. Clean adjacent surfaces and materials.

1303.1.8 Measurement

Measurement for payments shall be done as indicated in the Bill of Quantities.

1303.1.9 Payment

Payment for work will be made on the basis of contract unit price indicated in the BOQ.

The payment will be full and final compensation for all material, transportation, scaffolding, labor, equipment, accessories, installation, testing, commissioning and incidentals required to complete the respective work as specified

1800 SANITARY, PLUMBING AND WATER SUPPLY WORKS

1801 Scope

This Specification covers the construction of internal and external water supply, soil, waste, vent and rain water system, installation of toilet fixtures. The Contractor shall furnish all materials, labour and related items necessary to complete the work indicated on the Drawings and Specified herein.

1802 Reference Document

Unless specifically mentioned otherwise, all the applicable codes and standards published by the Indian Standard Institution and its subsequent revision and all other Standards which may be published by them before construction work starts, shall govern in respect of design, workmanship, quality and properties or materials and method of testing.

Some of these available Standards are listed below:

Code	Subject
IS:778 - 1964	Specification for gunmetal gate, globe and check valves for water, steam and oil only.
IS:780E-1966	Specification for sluice valves for various purposes.
IS:781E- 1959	Specification for sand cast brass screw down bib taps and stop taps for water services.
IS:1171-1963	Basic requirement of water supply, drainage and sanitation.
IS:1239-1968	Specification for M. S. or G. I. Pipes and fittings.
IS:1703- 1962	Specification for cast iron manhole covers and frames intended for use in drainage work.
IS:1742-1960	Code of practice for building drainage.
IS:2065-1963	Code of practice for water supply in building.
IS:771 -1958	Specification for vitreous china sanitary ware.
IS:4985	Specification for UPVC pipe
IS:5382	Specification for rubber seal ring.
ASTM: D 2846	Specification for CPVC pipes

1803 Related Work

The Contractor shall become familiar with other Divisions of the specifications affecting work of this trade.

1804 General Requirement

The scope of work covered by this Chapter shall be deemed to comprise the furnishing and installation of all cold and hot water supply pipe work, soil, waste, rain and vent pipe work, vitreous china sanitaryware, CP fixtures etc as shown on plans and as specified. It shall also include the supply of the appertaining materials and parts, scaffolding, off loading on site and all operations in connection with civil works, unless otherwise specified in the Bills of Quantities.

Materials and parts, which the Contractor shall supply and install, shall be new and unused. They shall comply with the regulations regarding quality and dimensions. Materials and parts that are not standardised shall be used only with the approval of the Engineer.

The materials shall be protected from rain and inclement weather all to the satisfaction of the Engineer. The cost of covering materials shall be deemed to be included in the unit prices for the brickwork and masonry.

1805 Samples/Submittals

Representative samples to be used shall be submitted to the Engineer and his approval taken before bulk purchase. The samples shall be kept with the Engineer for future reference and comparison. All materials supplied shall conform to these approved samples in all respects.

1806 Basic Materials and Method

All materials provided for the contract will be in strict accordance with the latest version of the applicable Indian Standards. All manufacturer's data, specifications and relative information together with samples will be submitted to the Engineer or Site In-charge for approval prior to being purchased, otherwise at the contractor's own risk.

1807 Materials Trade Names Variations

Tenders shall be based upon complete installations. Products required which are not shown or mentioned, or not specified herein as to manufacturer; quality, etc. shall be furnished of the highest quality. Materials shall be new and free from all defects. All materials, apparatus or equipment called for on the plans or in the specifications by trade names, or the name of a particular manufacturer, or by catalogue reference are the materials, apparatus, or equipment which should be allowed for in the Tender, or qualification submitted at the time of Tender submission.

1808 Regulations

The work shall be carried out in accordance with all rules, regulations, by-laws and requirements of all authorities having jurisdiction. All changes and alterations required by an authorized inspector of any authority having jurisdiction should be carried out at no cost to the Owner.

1809 Drawings and Specifications

These specifications shall be considered as an integral part of the drawings, which accompany them. Neither the plans nor the specifications shall be used alone. Any item or subject omitted from one, but which is mentioned or reasonably implied in the other shall be considered as properly and sufficiently specified and therefore must be supplied by the contractor. Misinterpretation of any requirements of either the drawings or specifications shall not relieve the contractor of his responsibility for properly completing his work. The contractor shall apply to the Engineer or Site In-charge for any explanation, which he may require in regard to the meaning and intent of any clause in the specification and contract. He shall be held responsible for any errors or losses consequent upon failure to obtain such explanation. The contractor shall consult with the Engineer or Site In-charge to obtain detail drawings or instructions for exact location of equipment as work progresses, before installing fitting or equipment and will be responsible for coordination with all other work trades including finishes. Drawings show general location and routes to be followed by pipes, ducts, etc. where not shown, or shown diagrammatically, the contractor shall install them in accordance with best trade practices.

1810 Shop Drawings

The contractor shall submit to the Engineer or Site In-charge all shop and setting out drawings or diagrams necessary in order to make clear the work intended or to show its relation to adjacent work of other trades. The contractor shall make any changes in such drawings or diagrams, which the Engineer or Site In-charge may require, consistent with the contract. Details of shop drawings submitted for approval shall show clearly the relations of the various parts to the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements, such measurements shall be made by the contractor and noted on the drawings before being submitted for approval.

1811 As Built Drawings

The Contractor shall submit As Built Drawings in soft copy and print, within 30 (thirty) days of the issuance of the Letter of Completion.

1812 Maintenance Manual

The Contractor shall submit a draft outline of the proposed format and contents within 30 days after the issuance of the virtual completion certificate by the Engineer. The submitted manual will conform to the approved outline.

The Manual shall be contained in a black three ring loose-leaf binder and be subdivided into sections according to the various divisions of this specification. Material shall be fully indexed, with a typed contents page located at the front of the Manual. Tabbed sheets shall be used to subdivide the contents as required. All material shall be neatly and legibly presented. Photocopies will be used only if original documents are not available.

All materials shall be clearly labeled according to manufacturer, manufacturer's reference, source, location of use, and quantity.

Include in the Maintenance Manual a list of all materials submitted indicating quantities, source, manufacturer, manufacturer's reference(s), and location of use. Also include printed manufacturer or supplier's instructions on use, application, and maintenance of all products and materials.

1813 Cutting And Patching

Openings not indicated on the Engineering or Structural drawings, which are required for bringing equipment into the building or for other temporary or permanent service, shall be approved by the Engineer or Site In-charge. The contractor will provide maintain and restore these openings and shall pay for their provision and restoration. Ample notice shall be given of size and location of such openings. The contractor shall ensure that he does not undertake any cutting that may impair the strength of the building. No holes, except expansion bolts and small screws may be drilled into the structure without obtaining prior approval. Persons, skilled in the trades, shall do all cutting and patching work in a neat and workman like manner.

1814 Painting

All equipment supplied under this specification shall be delivered to the site with a factory applied prime coat of paint unless noted otherwise. All supports and hangers shall receive a prime coat of paint. Painting where required for pipe, duct services, equipment identification, including stenciling shall be carried out by a paint tradesman under this division in accordance with the workmanship and material specification. All factory prime-coated or finish coated equipment shall be touched up or repainted if equipment is marred during shipment or installation.

1815 Expansion and Contraction

Unless shown otherwise, the contractor shall be responsible for measures to control the thermal movement of piping and apparatus. Piping shall be erected in such manners that strain and weight does not come directly upon connections, joints or apparatus. Where possible, the effect shall be obtained by providing changes in direction and loops in pipe runs, supplemented by the necessary guides, anchors and limit stops.

1816 Pipe Sleeves

An adequate number of sleeves (pipe inserts) of mild steel shall be provided where pipes pass through concrete, masonry and similar work. The pipe inserts shall have a flange welded in the center around its circumference, in order to provide water tight and secure fixing into the structure. The sizes of the pipe sleeves (pipe inserts) shall be as per the drawings supplied and / or as given below.

5016.1 Sleeves through Exterior Walls below Grade

i. Sleeves in exterior foundation walls below grade shall project 25 mm beyond the outside surface of the wall and be flush with the inside surface.

ii. The annular space between the sleeve and the pipe shall be caulked with un-tarred oakum and sealed with approved caulking compound. The sealing shall be 25 mm deep from each side. The pipe and sleeve surfaces shall be cleaned to enable good bonding. Allow 24 hours for setting of the compound. The contractor shall adhere strictly to the manufacturer's recommendation.

5016.2 Sleeves through Interior Wall, Floor and Ceilings

i. Sleeves through interior masonry walls and partitions shall be set flush with finished wall surfaces.

ii. Sleeves through floors in finished areas shall terminate 25 mm above the finished floor.

iii. Sleeves through floors in service area (e.g., mechanical rooms) shall terminate 50 mm above the finished floor.

iv. The annular space between sleeves and pipes shall be packed with Silicon Rubber. In Machine Room, the packing shall be finished at both ends of the sleeve with 6 mm deep caulking compound. In other areas the finishing may be on the room side only.

v. Pipe insulation shall be carried full thickness through pipe sleeves.

Unless otherwise specified elsewhere, the sleeves size shall be as follows:

Table 5000.1: Sleeve Size

Out Side (OD) Diameter of Pipe (If Insulated, OD of Insulation)	Sleeve Size (Nominal Bore of the Pipe for Sleeve)
OD 20 mm to OD 32 mm	NB 2" (50 mm)
OD 33 mm to OD 75 mm	NB 4" (100 mm)
OD 76 mm to OD 125 mm	NB 6" (150 mm)

1817 Clean Up

The contractor shall clean all exposed metal surfaces from grease, dirt or other foreign materials. Chrome plated and polished work shall be left bright and clean. All openings in pipes and fixtures shall be properly capped and plugged during construction. Fixtures and equipment shall be properly protected from damage during the construction period and shall be cleaned in accordance with the manufacturer's instructions.

1818 Sanitary Fixtures, Runs, Pipes

i. The recommended positions of the sanitary fixtures, runs of all piping etc. as shown in the layout drawing will be adhered to as far as possible or as far as practicable.

ii. Should there be any discrepancy or incomplete description, ambiguity or omission in the drawings and other documents, whether original or supplementary forming the Agreement, completion or maintenance of the installation, the Contractor shall immediately on discovering the same, draw the attention of the Engineer to this.

iii. Prior to the installation of all fittings, pumps, traps, etc. The finial position shall be ascertained from the Engineer.

1819 Proprietary of Materials

Where proprietary of materials are specified hereafter, the Contractor may propose the use of similar materials of other manufacture but of equal quality for approval by the Engineer. Should the price of alternate materials proposed be lower in price, the Contractor shall a revise schedule of price for the particular item along with his proposal for the use of alternate material in lieu of the one specified.

All materials and goods, where specified to be obtained from a particular manufacturer or supplier, are to be used or fixed strictly in accordance with their instructions.

1820 Packaging

The Contractor is to provide special packaging according to standard practices to project materials or parts of materials from damage, and his rates will be deemed to include for all such protection.

1821 Specified Materials

The source of materials stated in the Specifications are those from which materials are generally available. However, materials not conforming Specifications shall be rejected even if they come from the stated sources. The Contractor should satisfy himself that sufficient quantity of material of acceptable Specification is available from the stated or other sources.

1822 Standards

All materials, Workmanship and components shall where applicable and unless otherwise stated in the Agreement or comply with Indian standard or code of practice in use. The Indian Standards referred to here are:

Indian Standards (I.S.), Published by Bureau of Indian Standard, India.

Should there be any discrepancy or incomplete description, ambiguity or omission in the drawings and other documents; whether original or supplementary forming the Agreement, completion or maintenance of the installation, the Contractor shall immediately on discovering the same draw the attention of the Engineer to this. The Works shall be carried out according to this Specification whether specifically mentioned elsewhere or not. No extra in any form will be paid unless it is definitely stated as it is in the Bill of Quantities. Whenever the Specifications are not given or when the Specification is ambiguous, the relevant Indian standards or British Standards and further amendments will be considered as final and binding.

1823 Quantities

The Works shall be related to the drawings which the Agreement is presumed to have studied. Nothing extra will be paid for any items because of its shape, locations or other difficult circumstances, even if the schedule makes no distinction, as long as the item is shown in the drawings. The quantities given in this schedule are provisional. The Contractor will be paid for the actual quantity of Works executed as measured at Site and priced at the rates in the schedule. The Engineer reserves the right to increase or decrease any of the quantities or to totally omit any item or Works. Any claim by the Contractor on these accounts will not be entertained.

1824 Excavation for Pipe Lines

In excavating trenches for pipe lines, slight rails shall be erected, before excavation is commenced, at every 100 meters and at all change of direction or gradient. The sight rail shall consist of a board, not less than 10 centimeters deep, with the top edge planed true and straight. This shall be supported by a stout wooden post at each end, and its top edge accurately fixed to a definite and, as far as practicable, uniform height above the level of the pipe to be laid. The centre line of the pipe shall be denoted on each rail thereon, and the rail on one side of the centre line painted rail, and on the other side white. The depth of the excavation and the level of the pipe invert shall be checked by means of boning rods of appropriate length. The boning rods used are to be accurately made to the various lengths required, the lower and being provided with a shoe of sufficient projection to rest on the centre of the invert of the last pipe laid.

The excavation shall be carried out to the lines and levels shown on the plans or as ordered by the Engineer, and shall be deep enough to permit a minimum cover as specified hereunder.

Table 5000.2: Minimum Cover Required

Pipe	Minimum Cover in mm
	Normal Ground
Galvanized Iron	600
CPVC / Multilayer	600
PVC/ DWV	600
RCC Hume	900

The Contractor shall be responsible for and shall at his own cost, make up all subsidence or slips whether arising from its nature of the materials in embankments, from the nature of the ground or from any cause whatsoever. The Contractor shall, his own expense keep the whole of the Working Site dry and from water and construct such temporary water courses and drain as may be surface of the Works. The Contractor shall include in his rates the cost of providing all tools, machinery and all temporary Works such as staging, struts, shoring, planks and poling boards and their removal on the completion of the Works and the cost of pumping and trenches. Whenever pumping is necessary, the whole Works shall 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 great depth than necessary shall be filled into the required level with suitable material approved by the Engineer and rammed solid with watering at the Contractor's expense.

Special care shall be taken provide a solid even bed for the barrel of the pipe, and the floor of the trench shall be properly shaped to received the socket it and the barrels of the pipes. Where lock is met within the trenches, the excavation shall be taken to a depth of 15 cm of selected filling (approved by the Project Engineer) placed on the rock and consolidated to form a firm even bed for the pipe where required, socket holes shall be cut in the rock. In narrow trenches, socket holes shall be cut in the rock. In narrow trenches, the width of the excavation shall be increased. The sides of trenches shall be allowed a slope not exceeding 1 to 12, the width at the bottom being at least 30 cm wider than the socket of the pipe, so as to allow room for ramming the refilled materials under and at the sides of the pipe.

1825 Re-Filling

No refilling shall be carried out until the construction Works has been tested and approved. The re-filling on the top and around the sewers shall be done with great care and in such a manner as will obtain the greatest amount of compactness and solidity possible. For that purpose, the earth shall be laid and rammed in regular layers not more than 230mm (9") thick up to the surface and also watered and rammed at each layer. The top soil shall be carefully replaced to match the existing.

1826 Disposal of Surplus Soil

The contractor shall, at his own costs and charges, provide places for disposal of all surplus materials not required to be used on the works. As each trench is refilled the surplus soil shall be immediately removed, the surface properly restored and roadways and sides left clear.

1827 Testing of Pipes Lines

CPVC Water Supply Pipes

After each section of the pipeline has been laid and jointed and anchorage's built in for the bends, the pipeline shall be tested in lengths of 2 kilometers or less as directed by the Engineer, by and at the expense of the Contractor. Before testing, the trench shall be partially backfield except at the joints. The accessories nodded viz. Test pump, pressure gauge, end pieces including connecting valves and piping etc., for carrying cut the hydraulic tests shall be provided by the Contractor's. The Contractor shall provide the supply of necessary labour and water for testing at his expense, the cost of this shall be included in the unit rate for lying and jointing of pipes. The pipes and joints found to be defective during the test shall be replaced and or reduce by the Contractor and the related labour cost be met by the Contractor.

The two tests that shall be carried out are -

i. Pressure test: a pressure of at least double the maximum Working pressure, pipes and joints shall be absolutely watertight under the test.
ii. Leakage test (to be conducted after the satisfactory completion of the pressure test) at a pressure to be specified by the Engineer for a duration of two hours. Unless otherwise specified the leakage test pressure shall be the lower or ½ times the maximum static pressure that will be experienced by the pressure after installation.

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

The procedure to be followed are as follows:

i. Pressure Test:

- Each valved section of the pipe shall be slowly filled with water and all air shall be expelled from the pipe through hydrants and blow-offs. If these are not available are not available at high places, necessary tapping may be made at points or 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 of the lowest point of the line or section under test and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to the poi in a manner satisfactory to the Engineer. The duration of the test shall not be less than 24 cm.
- All exposed pipes, fittings, valves and joints should be carefully examined. Any cracked or defective pipe, fitting and value discovered in consequence of this pressure test shall be removed and replaced by sound material and the test shall to repeat. All joints showing visible leaks shall also be recalled or redone until tight.

ii. Leakage Test:

- Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved section thereof, necessary to maintain the specified leakage test pressure.

The pipe installation will not be accepted until the leakage is less than the number of cm3/h as determined by the formula-

$$q1 = \frac{N\ D\ P}{3.3}$$

Where,

q1 = the allowable leakage in cm3/h.

N = number of joints in the length of the pipeline.

D = diameter in mm, and

P = the average test pressure during the leakage

1828 Sanitary and Sewer Pipes

1828.1 Gully Traps

Gully traps shall be as per the drawing supplied.

Gully traps shall be fixed in cement concrete 1:5:10 and a brick masonry chamber 300 mm x 300 mm inside in cement mortar 1:5 with 150 mm x 150 mm grating inside and 300 mm x 300 mm CI sealed cover and frame weighing not less than 7.3 kg to be constructed as per standard drawings.

1828.2 Sewer Drainage and Site Drainage

The work covered under this section comprises of the supply and installation of the following:

i. Night Soil and Waste Water drainage system complete
ii. Strom Water drainage system complete

Pipes for these works shall be as follows:

i. Pipes up to OD 110 mm size should be of PVC / DWV Pipe having working pressure of 4.0 and 6.0 kgf per sq cm and carried out as described herein.
ii. Pipes over OD 110 mm and up to OD 250 mm should be of PVC / DWV and carried out as described herein.

1828.3 Manholes and Grease Trap Collection Chambers

Manholes and Chambers shall be constructed as shown in Detail Drawings, and where shown on Site Services layout. Materials shall be of not less than 225 mm Brickwork, cast-in-place concrete, or pre cast concrete. Concrete shall be M:20 strength. All brickwork shall be plastered in cement, sand (1:2). Gratings, lids and castings in general shall be in Cast Iron in accordance with IS 5961 and built in or fixed as detailed.

All manholes designated to be constructed shall be as specified in the Schedule of Quantities.

All manholes shall be supported on a base of cement concrete of such thickness and mix as given in the Schedule of Quantities or shown on the drawings.

Where not specified, manholes shall be constructed as follows:

Table 5000.3: Details of Manholes and Grease Trap

Maximum Depth in mm	Internal Dimensions of Manhole Chamber
Up to 450 mm	450 mm x 450 mm
Over 450 mm and Up to 600 mm	600 mm x 600 mm
Over 600 mm and Up to 1200 mm	Dia 900 mm or 900 mm x 900 mm
Over 1200 mm and Up to 3000 mm	Dia 1200 mm or 900 x 1200 mm

All manholes shall be provided with cement concrete benching in 1:2:4 mix. The benching shall have a slope of 100 mm towards the channel. The depth of the channel shall be the full diameter of the pipe. Benching shall be finished with a floating coat of neat cement.

The manhole chamber covers and frames shall comply with the following ratings:

Table 5000.4: Details of Manhole Cover

Manhole Cover	Out Side Size of Frame	Inside Size of Frame	Weight in Kg
Light	27" x 27"	24 " x 24" or Ø 500 mm	78.5 kg
Heavy	27" x 27"	24 " x 24" or Ø 600 mm	216 kg

All manholes shall be plastered with 12 mm thick cement mortar 1:3 (1 cement & 3 coarse sand) and finished inside with a floating coat of neat cement. Manholes shall be plastered outside as above cut with rough plaster.

All manholes shall be provided with cast iron covers and frames and embedded in reinforced cement concrete slab weight of cover and frame thickness of slab shall be as specified in the Bill of Quantities or given above.

1828.4 Making Connections

Contractor shall connect the new sewer line to the existing manhole by cutting the walls, benching and restoring them to the original condition. A new channel shall be cut in the benching of the existing manhole for the new connections; contractor shall remove all sewage and water if encountered in making the connection without additional cost.

1829 Soil, Waste, Vent and Rain Water Piping

1829.1 Soil, Waste and Vent Pipes

1829.1.1 Polyvinyl Chloride (PVC) Pipes and Fittings:

All soil, waste, vent and rain water pipes shall be Un-Plasticized Rigid Polyvinyl Chloride (uPVC) pipes unless specified otherwise. All pipes shall be straight and smooth and inside free from irregular bore and other manufacturing defects.

All fittings shall conform to Standard DIN: 19531 or BS: 4514. Fittings shall be of the required degree with or without access door. All access doors shall be made up with rubber gasket, while screw cover to make the fitting air and water tight.

The recommended joints of uPVC pipes shall be solvent cement joints or with rubber ring socket joints. The rubber rings shall confirm to Indian Standard IS: 5382.

1829.1.2Storage and Handling

uPVC Pipes: The pipes should be given adequate support at all time. Pipes should be stored in a reasonably flat surface free from stones and sharp projections so that the pipe is supported throughout its length. In storage, pipes racks should provide continuous support and sharp corners of metal racks should be avoided. Socket and spigot pipes should be stacked in layers with socket end placed at alternate ends of the stacks to avoid top sided stacks. It is recommended not to store pipe inside another pipe.

On no account pipes shall be stored in a stressed or bent condition or near the source of the heat. Pipes should not be stacked more than 1.5 meters high and pipes of different sizes and classes should be stacked separately.

The ends of pipes should be protected from abrasion and particularly those specially prepared for jointing either by spigot or socket solvent cement joints.

If due to unsatisfactory storage of handling a pipe becomes 'kinked' the damaged portion should be cut out completely. 'Kinking' is likely to occur in very thin walled pipes.

1829.1.3Jointing of uPVC Pipes

Methods of Jointing:

i) Solvent Cement Joints

The technique is used with spigot and socket type joint, in which the socket is made specially to form a close fit on the pipe end and with injection molded fittings.

Solvent Cement of the pipe manufacturer make shall be used as per the recommendations of the manufactures.

The dust, oil, water grease etc. should be wiped out with dry cloth from the surface to be coated with solvent cement. The coating of solvent cement shall be applied evenly on the inside of the fittings for full length of insertion and then on the outside of the pipe end up to the marked line and the pipe twisted to a quarter of a turn to spread the cement evenly at the same time ensuring the pipe, pushed home fully into the socket. The pipe should be pushed into the rifting socket and held for one to two minutes as otherwise the pipes comes out of the fitting due to slippery quality of cement and the tapering inside bore of the fitting. The surplus cement on the pipe surfaces shall be wiped out. In most of the cases the pipe inserted should be up to the marked line and in no case shall be less than 2/5 of the diameter of the pipe and up to marked line.

When the joint is made, the remaining cement on the pipe surfaces shall be wiped off immediately without fail as the continued action of solvent cement will weaken the wall on the pipe and cause failure under pressure. For warm place in summer month joints shall be made preferably early in the morning or in the evening, when it is cooler and for cold place in winter joints shall be made preferably during the day (sunny) when it is warm.

Since solvent cements are inflammable they should not be used near the naked flames. In certain cases, fumes given off from solvent cement may be a source of danger if not carried in a ventilated area.

When not in use, containers of solvent cement should be kept closed tightly to avoid loss of solvent or entry of dirt. Cement, which has gelled or hardened, should be discarded.

ii) Rubber Ring Joints or 'O' Ring Shrink Joints (Shaft Piping)

uPVC pipe and uPVC pipe fittings may be jointed with approved rubber ring to provide the watertight seal. The ring may be housed in groove formed in the socket housing. The rubber is compressed and makes a seal between the pipe and the housing. It is advisable to use uPVC Lubricant for proper sliding of the pipe end to the rubber socket piece.

1829.1.4Fixing to Supports

The pipes and specials (fittings) before being laid of fixed shall be examined to see that there are no cracks or defects. The pipes and fittings shall be thoroughly cleaned of all dust and dirt. After laying or fixing the pipes in position they shall be arranged in such a way that centre line of pipes coincide with the centre line of the alignment. Fittings, cleanout and floor drains shall also be laid in their position as stated above uPVC Pipes shall be fixed vertically in shaft by means of uPVC clips anchored to walls using uPVC washers, Galvanized Screws and Plastic dowels. In case of pipes laid horizontally, pipe shall be supported on M.S. Brackets / Hangers of approved design clamped with uPVC Clips.

All pipes laid shall have its open ends securely closed with appropriate plugs during progress of work. Pipes and fittings shall be fixed by using proper approved holder bat clams and special hangers. The pipes shall be fixed perfectly vertical or in a line as directed or as shown in the drawings. The pipes, lay vertically or horizontally shall have the supporting clamps, hangers, Brackets, etc., as per the specification or as directed by the Engineer. uPVC bat clamps holders shall be used to fix all vertical uPVC pipes in truly vertical position. Branch pipes shall be connected to the stack at the same angle as that of the fittings. Each stack shall be terminated at top for vent. Horizontal pipes running below the ceiling shall be fixed on structural with adjustable clamps. Horizontal pipes shall be laid to uniform slope as mentioned in the drawings and the clamps adjusted to the proper levels so that the pipes fully rest on them. As per the site condition, if required or directed by the Engineer, pre-fabricated semi circular (half the diameter of the said pipe) made out of Plain GI Sheet of proper thickness shall be provided below the horizontal running pips along with above-mentioned adjustable clamps.

1829.1.5Testing

All uPVC Soil, Waste, Vent, Rain Water (SWR) pipes and uPVC pipe fittings shall be tested by smoke test and left in working order after completion. The smoke test shall be carried out as stated below:

Smoke shall be pumped into the SWR pipes at the lowest level from a smoke machine, which consists of a blower and a burner.

The materials usually brunt are greasy cotton waste which form clear pungent smoke which is easily detectable by sight as well as by smell if leaking at any point of the drain. During testing if any joint is found leaking the same shall be rectified by the Contractor at no extra cost & to the satisfaction of the Engineer-in-charge.

1829.2 Nahani or Floor Traps

Nahani or floor traps shall be uPVC, deep seal with an effective seal of 50 mm. As per drawing, Waste pipes may be discharged over the trap. The trap and waste pipes shall be set in cement concrete blocks firmly supported on the structural floor. The blocks shall be in 1:2:4 mix (1 cement: 2 coarse sand: 4 stone aggregate) and extended 35 mm below finished floor level. Contractor shall provide all necessary shuttering and centering for the blocks. Size of the block shall be 300 mm x 300 mm and of the required depth.

1829.3 Cutting and Making Good

Pipes shall be fixed and tested as building work proceeds. Contractor shall provide all necessary sleeves, holes and chases in structural members as building work proceeds. Wherever holes are cut or left originally they shall be made good with cement concrete 1:2:4 mix (1 cement: 2 coarse sand: 4 stone aggregate) and the surface restored as in original condition. No additional payment shall be made for cutting and making good of holes.

1830 Waste Pipes from Appliances

1830.1 Waste Pipes from Appliances

Waste pipe from appliances e.g. wash-basins, shower, bath tub, sinks, drinking fountain, urinals, water closets, etc. shall be of uPVC as given in the Schedule of Quantities or drawings. "Galvanized or Black Wrought Iron Pipes or Pipe Fittings should not be used for Soil Pipes, Waste Pipes, Rain Water Pipes, Anti-Siphon Pipes, Vent Pipes or Drain Pipes from any appliances."

All pipes shall be fixed in gradient towards the out fall drain. Pipes inside a toilet room shall be chased unless otherwise shown on the drawings. Where required pipes may be run at ceiling level in suitable gradient as mentioned in the drawing or directed by the Engineer and supported on structural clamps.

1830.2 Clean Outs

Clean-outs shall be full pipe size up to 110 mm and a minimum of 110 mm on larger pipe. A clean out shall be installed at, or as close as possible to, the base of every vertical waste, soil and drain stack. A clean out shall be installed at the up-slope of each pipe at which a building drain or branch changes direction by more than 45°.

Clean-outs in horizontal drainage piping shall be at intervals not greater than:

- 15 m where the piping is of dia 100 mm and smaller.
- 30 m where the piping is of large than dia 100 mm.
- 6 m where waste pipes are horizontally connected to sinks.

Nickel Bronze or Stainless Steel Floor Plates with Frames shall be installed on finished floors for access to clean-outs. Clean-outs on horizontal lines in finished areas shall be as per IS specifications.

1831 Water Supply

1831.1 Pipe Line

All Water Supply Pipe Line shall be as mentioned in the drawings and Bill of quantities. The Pipes will be:

1831.2 Chlorinated Polyvinyl Chloride (CPVC) Pipe & Fittings

Chlorinated Polyvinyl Chloride (CPVC) Tubes / Pipes of Class 11 in Copper Tube Size (CTS) dimensions conforming to ASTM: D 2846 of approved brand. Pipe Fittings shall be of Chlorinated Polyvinyl Chloride (CPVC) of Class 11 in Copper Tube Size (CTS) dimensions conforming to ASTM: D 2846 of approved brand. The Pipe Fittings are Couplings, Elbows, Bends, Tees, Transition Coupling, Transition Bushings, etc. Manufacturer's Trademark should be stamped on the CPVC Pipe Fittings.

CPVC Pipe and CPVC Pipe Fittings shall have cold weld joints by CPVC Solvent cement confirming to ASTM: 493. After cutting the pipe, care shall be taken to remove burr from the end of the pipe with appropriate tools. Only with TEFLON tape, threaded Fixtures shall be fitted with CPVC Threaded Adopters.

1831.3 Laying

All Pipes and fittings shall be of class specified in BILL OF QUANTITIES manufactured under respective Standards.

All main supply pipes and other pipes to be laid under the ground shall be laid over a minimum of 600 mm sand bedding or selected granular material compacted as described herein this specification.

The water main shall be laid and maintained to the required lines and grades with fittings, valves, and connections at the required locations and all valves and stems plumb.

Proper implements, tools and facilities shall be provided and used by the Contractor for the safe and convenient performance for the work.

All pipes, valves and fittings shall be carefully lowered into the trench piece by piece by hand ropes or other suitable tools or equipment in such a manner as to prevent damage to water main materials and protective coatings and linings.

Under no circumstances shall water main materials be dropped or dumped into the trench.

Valves, valve covers, meters, tapping sleeves and other accessories shall be installed as per the manufacturer's recommendations and in conjunctions and compliance with the requirements of the Local Government or Public Service Authority specifications.

It will be the responsibility of the Contractor to furnish and install all proper size pipe bends for both horizontal and vertical deflections that are required to construct the water main to the line and grade as shown and specified.

1831.4 Jointing

The jointing shall be made in accordance with the instructions of the pipe and fitting manufactures. The pressure pipe shall be tested to a minimum of 10 kg / sq. cm. pressure. The setting and arrangement of pipes shall be as per the working drawings. Pipes are cut to size and ends are squared.

The pipes and fittings shall be inspected at the site before use. Where the pipes have to be cut, the end shall be carefully plugged so that no obstruction to bore is effected.

The pipe shall be cleaned and cleared of all foreign matters before being laid. For joining, the outside of pipe and the inside of the socket shall be cleaned. Care should be taken that all pipes and fittings are properly joined so as to make the joints completely watertight.

After lying, the open ends of the pipe shall be temporarily plugged to prevent access of water, soil or any other foreign materials. Jointing of pipes shall be made according to the different kind of pipes by thread screwing, cold welding, flanges, or flexible joints etc. Joints between dissimilar materials, e.g. copper shall be by means of copper-alloy unions or union ferrules, etc.

Care shall be taken to ensure that all piping and fittings are clean internally and free from particles of sand, soil, metal, plastic, filings and chips, etc.

1831.5 Clamps

All pipes laid shall have its open ends securely closed with appropriate plugs during progress of work. Pipes and pipe fittings shall be fixed by using proper approved holder bat clams and special hangers. The pipes shall be fixed perfectly vertical or in a line as directed or as shown in the drawings. The pipes laid vertically shall have supporting, the clamps at 1.5 meters centre to centre and the pipes laid horizontally, the clamps at every 1.2 meters centre to centre as shown in the Drawing or as directed by the Engineer. MS bat clamps holders shall be used to fix all vertical pipes in truly vertical position. Horizontal pipes running below the ceiling shall be fixed on structural with adjustable clamps. Horizontal pipes shall be laid to uniform slope as mentioned in the drawings and the clamps adjusted to the proper levels so that the pipes fully rest on them. As per the site condition, if required or directed by the Engineer, pre-fabricated semi circular (half the diameter of the said pipe) made out of Plain GI Sheet of proper thickness shall be provided below the horizontal running pips along with above-mentioned adjustable clamps. No Iron hooks shall anchor pipes in wall chases.

1831.6 Testing Water Service Lines

The water service lines shall be hydrostatically tested. Test pressure shall be 10 kg / sq. cm. and the pipes shall be tested for the specified pressure for 24 hours. Defective pipes, pipe fittings and pipe joints shall be replaced or repaired immediately and retested.

1831.7 Unions

Adequate number of unions shall be provided on all pipelines to enable to dismantle later. Unions shall be provided near each valve, stopcock, and check valve.

1831.8 Shut-Off Valve

Gate Valves or Ball Valves shall be heavy gunmetal full way type conforming to IS: 778 (Class: II). Valves shall be tested at manufacturer's works to 21 kg / sq. meter and shall have manufacturer's name stamped on it.

1831.9 Check (Non Return) Valves

Check Valves / Non Return Valves shall be heavy gunmetal Swing Type conforming to IS: 778 (Class: II). Valves shall be tested at manufacturer's works to 21 kg / sq. meter and shall have manufacturer's name stamped on it.

The Engineer or Site In-charge shall approve all valves before installation work. Up to 65 mm and small shall be gunmetal

1831.10 Isolating Valves

Isolating valves shall be provided on all branch lines to enable isolation of groups of fixtures and sections of building and as shown on drawings.

1831.11 Drain Points

Drain valves shall be installed in all liquid carrying systems at the low points to facilitate complete drainage of the system.

1831.12 Hose Bibs

Hose bibs in the building shall be cast brasses with a leather disc, screwed pipe end, 20 mm pipe hose tread. Hose bibs in finished areas shall be chromium plated.

1831.13 Insulation

All internal and external Hot and Cold water supply pipes shall be insulated using closed cell elastometric nitrile rubber foam. Working temperature of the tube shall be -50°C up to +105°C and the thickness shall be 19mm.

1832 External Water Supply

1832.1 Pipes

All pipes lay outside of the building and generally underground shall be considered as External Water Supply. The types of Pipe and Pipe Fittings shall be as per drawings and / or as mentioned in the Bill of Quantities. The installation of pipe line shall be properly carried out and should be completely watertight. All fixtures and fittings shall be properly installed and checked against leaks at designated pressure. Necessary Pipe Sleeves in the wall, floor, etc should be provided as per the specification.

1832.2 Excavation

Generally, external water mains pipe shall be laid a minimum of 600 mm below ground level. Excavation for trenches shall be done as specified elsewhere, but the depth of the trenches shall be as follow

Table 5000.5: Excavation for External Main Pipes

Size of Pipe	Width of Trench	Depth of Trench
For dia 15 mm to 50 mm	300 mm	750 mm
For 65 mm to 100 mm	450 mm	1000 mm

1832.3 Backfilling

Backfilling of trenches shall not commence until the pipes therein have been tested and approved by the Engineer. Under non-paved areas selected excavated materials free from large stones refuse, or organic material as approved by the Engineer or Site In-charge shall do the backfill.

1833 Internal Water Supply

1833.1 Pipes

All pipes inside the building from Over Head Tank to the Toilets and where specified, shall be considered as Internal Water Supply Pipe Line. The types of Pipe and Pipe Fittings shall be as per drawings and / or as mentioned in the Bill of Quantities. The installation of pipe line shall be properly carried out and should be completely watertight. All fixtures and fittings shall be properly installed and checked against leaks at designated pressure. Expansion of hot water pipes shall be compensated for by flexible piping layouts and / or by utilizing bends in pipe line. Necessary Pipe Sleeves in the wall, floor, etc as well as pipe supports, clamps, brackets, etc should be provided as per the specification and instruction of the Engineer.

1833.2 Pipe Supports and Hangers

The pipes and pipefitting before being laid to fixed shall be examined to see that there are no cracks or defects. The pipes and fittings shall be thoroughly cleaned of all dust and dirt. After laying or fixing the pipes in position they shall be arranged in such a way that centre line of pipes coincide with the centre line of the alignment. Fittings, Valves, etc., shall also be laid in their position as stated above. CPVC Pipes shall be fixed by push fit before any solvent cement is applied and when cleared by the Engineer then only permanent joints to be made. All the horizontal and vertical run pipes should be supported to walls with the help of GI/MS Pipe Clamps that should be anchored by Galvanized Screws and Plastic dowels. In case of pipes laid horizontally under ceiling, pipe shall be supported on M.S. Brackets / Hangers of approved design.

Table 5000.6: Spacing For Supports & Hangers of Fixing For Internal Piping

Kind of Pipe	Size of Pipe Line	Interval for Pipe Supports for Horizontal Run Pipe Line	Interval for Pipe Supports for Vertical Run Pipe Line
CPVC / PVC Pipe Line for Water Supply	15 mm/ ½ "	1.25 m	1.25 m
	20 mm / ¾"	1.50 m	1.50 m
	25 mm / 1"	1.50 m	1.50 m
	32 mm / 1¼"	1.75 m	1.75 m
	40 mm / 1½"	1.75 m	1.75 m
	50 mm / 2"	2.00 m	2.00 m
uPVC Pipe Line for Soil, Waste & Rain Water	OD 50 mm	1.50 m	2.00 m
	OD 75 mm	2.00 m	2.50 m
	OD 110 mm	2.00 m	3.00 m
	OD 160 mm	2.50 m	3.00 m

1834 Method of Measurement

GI, CPVC, MS Pipe Line above ground or under ground shall be measured per running meter or running feet and the rate shall be inclusive of all fittings including unions, Hangers, Brackets, Clamps, Pipe Sleeves, cutting chases etc on wall, ceiling, floor and making good the same and testing of pipes and fittings, making good.

Pipes below ground shall be measured per running meter or running feet and the rate shall be inclusive of all fittings and testing of pipes and fittings except the excavation for trenches, refilling and disposal of surplus earth.

Other Fixtures such as Gunmetal valves, non return valves, ball cocks, foot valves, stop cocks, bib cocks, etc., shall be measured by number.

1835 Bathroom Fixtures and Fittings

1835.1 Bathroom Fixtures

All bathroom fixtures, Ceramic and CP fittings shall be supplied free of cost by the Owners at site Store, Contractor shall make his own arrangement at his cost to check, take delivery, store, install in position including transportation to site of work. No allowances shall be made for theft, breakage and defective materials after taking delivery of the materials.

1835.2 Installation of Fixtures

The fixtures and fittings shall be provided with all such accessories as are required to complete the item in satisfactory working conditions, whether specifically mentioned or not in the Schedule of Quantities, Specifications and Drawings.

The Bathroom fixtures and fittings shall be installed at the correct assigned position as shown on the drawings and as directed by the Engineer in-charge/Engineer or Site In-charge/Owners, and shall fully meet with the esthetic and symmetrical requirements as demanded by the Engineer In-charge / Engineer or Site In-charge / Owner.

All fixtures and accessories shall be fixed in accordance with a set pattern matching the tiles or interior finish as per Engineer-in-charger's requirements. Wherever necessary, the fittings shall be centered to dimensions and pattern as called for.

Skilled workman shall install fixtures with appropriate tools according to the best trade practice. Manufacturer's instructions shall be followed for the installation of fixtures. Fixtures in all toilets shall be standard height, mounting as called for on the drawings. Fixtures shall be mounted rigid, plumb and true to alignment.

1835.3 Mock Up and Trail Assembly

The installation of the bathroom fixtures and fittings shall be as per the shop drawings approved by the Engineer-in charge.

The contractor shall assemble on trial basis at least one set of each type of bathroom fixture and fittings in order to determine precisely the required supply and disposal connection. Relevant instructions from manufacturers shall be followed as applicable. This trial assembly shall be developed to facilitate determining the location of punctures, holes, holding devices etc. that will be required for final installation in position of all bathroom fixtures and fittings. The above assembly shall be subject to final approval by the Engineer-in charge / Engineer or Site In-charge / Owner.

The fixtures in the trial assembly can be reused for final installation without any additional payments for fixing or dismantling of the fixtures.

1835.4 Supporting and Fixing Devices

The contractor at his own cost shall where required, provide all fixtures and fittings securely in position. The fixing devices shall be rigidly anchored into the building structure. The devices shall be rust resistant and shall be so fixed that they do not present an unsightly look in the final assembly. These shall be installed complete with appropriate washers and gaskets, jointing Materials and Screws etc. as per manufacture manuals.

1835.5 Final Installation

The contractor at his own cost shall install all bathroom fixtures and fittings in their final position in accordance with approved trail assemblies and as shown on drawings. The installation shall be complete with all supply and waste connections. The connection between built-in piping system and the bathroom fixtures shall be through proper couplings, unions and flanges to facilitate removal / replacement of bathroom fixtures without disturbing the built in piping system. All couplings, unions and flanges shall match in appearance with other exposed fittings.

Fixtures shall be mounted rigid, plumb and true to alignment. The outlets of water closet bowls and similar appliances shall be examined to ensure that outlet ends are butting on the receiving pipes before making the joints. It shall be ensured that the receiving pipes are clear of obstruction. When fixtures are being mounted attention shall be paid to the possibility of movement and settlement by other causes. Overflows shall be arranged as to give visible warning and discharge. A check shall be made to ensure that necessary anchoring devices have been provided for supporting Water Closets, Wash Basins, Sinks and other appliances.

1835.6 Protection against Damage and Theft

The contractor shall take every precaution to protect all bathroom fixtures and fittings issued to them against damage, misuse, crazing, staining, breakage and pilferage by providing proper wrapping and locking arrangement till the completion and handing over of the installation. At the time of handing over, the contractor shall clean, disinfect and polish all fixtures and fittings. Any fixtures and fittings found damaged, cracked, chipped, stained or scratched shall be removed and new fixtures and fittings free from defects shall be installed at his own cost to complete the work.

1835.7 Testing

All fixtures and fittings shall be tested for their proper performance by the Contractor thoroughly to satisfy himself that they are in order, before applying for virtual completion.

1836 Miscellaneous Work

Disinfecting the Piping System

Before commissioning the water supply system the contractor shall arrange to disinfect the entire system as described in the succeeding paragraph.

The water pipes shall first be filled with water and thoroughly flushed out. The storage tanks shall then be filled with water again and disinfecting chemical containing chlorine added gradually while tanks are being filled to ensure through mixing. Sufficient chemical shall be used to give the water a dose of 50 parts of chlorine to one million parts of water. If ordinary bleaching powder is used, the proportions will be 150 gms of powder to 1'000 litres of water. The powder shall be mixed with water in the storage tank. If a proprietary brand of chemical is used the proportions shall be as specified by the makers. When the storage tank is full, the supply shall be stopped and all the taps on the distributing pipes opened successively working progressively away from storage tank. Each tap shall be closed when the water discharge begins to smell of chlorine. The storage tank shall then be filled up with water from supply pipe and added with more disinfecting chemical in the recommended proportions. The storage tank and pipe shall then remain charged at least for three hours. Finally, the tank and pipes shall be thoroughly flushed out before any water is used for domestic purposes.

1837 Safety Code

- First aid appliance shall be maintained in a readily accessible place including adequate supply of sterilized dressings and cotton wool.
- An injured person shall be taken on a public hospital without loss of time, in cases where the injury necessitates hospitalization.
- Suitable and strong scaffolds should be provided for all works that cannot safely be done from ground.
- No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm (clear) and the distance between two adjacent runs shall not be more than 30 cms. When a ladder is used an extra labor shall be engaged for holding the ladder.
- The excavated materials shall not be placed within 1.5 meters of the edge of the trench or half of the depth of trenches whichever is more. All trenches and excavations shall be provided with necessary fencing and lighting.
- Every opening in the floor of a building or in working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be one meter.
- No floor, roof or other part of the structure shall be over loaded with debris or materials as to render it unsafe.
- Workers employed on mixing and handling materials such asphalt, cement mortar or concrete and lime mortar shall be provided with protective foot wear and rubber hand gloves.
- Those engaged in welding works shall be provided with welder's protective eye-shields and gloves.
- No paint containing lead or lead products shall be used.
- Suitable facemasks should be provided to the workers when the paint is applied in the form of spray or surface having lead paint dry rubbed and scraped.
- The Contractor to the painter shall supply overalls and adequate facilities shall be provided to enable the working painters to wash during the periods of cessation of work.
- Hoisting machines and tackle used in the works, including their attachments, anchorage and supports shall be in perfect condition.
- The ropes use in hoisting or lowering material or as means of suspension shall be of durable quality and adequate strength and free from defects.

1838 Sanitary Fixtures and Accessories

All sanitary wares and fittings shall be first class quality white glazed vitreous china ceramic and approved by the Engineer.

1838.1 Water Closet (W.C.)

a) European pattern W.C. commode and flushing cistern.

These shall be of white glazed vitreous china first class quality, double or single trap syphonic water closet suite as specified in the Bill of Quantities, P or S Trap, with attached ceramic flushing cistern as specified conforming to ISO or Indian Standard Specification. The commode and flushing cistern shall be free from cracks, blisters and shall have smooth surface.

Fixing: W.C. commode shall be fixed to floor with CP brass screws or by means of 75mm long 6.5mm dia counter sunk bolts and nuts imbedded in concrete or as per the instruction of the Project Engineer. The base of pedestal of the commode shall be filled with white cement mixed with pigment to match the shade of floor or as directed by the Engineer. Following measure shall be adopted for fixing the W.C. commode

- The central axis of the commode shall be perpendicular to the finished face of wall.
- The outlet of the commode shall be centrally placed in the rubber gasket of the PVC pipe as per drawing or as directed by the Engineer and shall have not leakage.
- The distance between centre line of outlet of W.C. commode and finished wall face shall be so adjusted as to rest squarely against the finished wall face.
- Seat and lid shall be of ISI marked solid of heavy duty quality and fitted exactly on the rim of the W.C. Commode with C.P. brass hinges, rubber buffers and C.P. brass nuts.

Method of Measurement: Measurement for the European Water Closet will be made per unit set of complete installation.

1838.2 Wash Basins

These shall be white glazed vitreous china of first class quality with single tap hole as specified in the Bill of Quantities. These shall be free from cracks, crazes, blister and shall have smooth surface.

Fixing: The basin shall be supported on brackets as per manufacturer's instructions. The basin shall be under-counter or wall hung type. There shall not be any gap between top edge of the basin and finished face of wall.

C.P. Pillar Cock: This shall be 15 mm size of C.P. brass central hole cock with fancy knob head.

Method of Measurement: Measurement for the Hand Wash basin will be made per unit set of complete installation.

1838.3 Urinals

These shall be white glazed vitreous china of first class quality flat back type. The urinals shall be free from cracks, blisters and shall have smooth surface.

Fixing: Urinals shall be fixed on the wall with the help of C.P. brass screws as per the manufacturer's instructions and/or directed by the Engineer. There shall not be any gap between the back edge of the urinal and finished face of the wall. Urinal shall be battery operated sensor type.

Method of Measurement: Measurement for the Urinal will be made per unit set of complete installation.

1838.4 CSEB Masonry Buildingss

CSEB Masonry Buildings shall be of stainless steel CSEB Masonry Buildings 304 grade steel or HDP in cylindrical type from Gintex or Rooftop or Hilltake or equivalent brand of the capacity as shown on the drawing and specified in the Bill of Quantities. Tank shall be supplied with manhole covers and locking arrangement as per drawing or as directed by the Engineer.

CSEB Masonry Buildings shall provide inlets, outlets, scour and overflow pipes, sockets for float level switches and inter connections if required. Overflow pipes shall be provided with a mosquito proof brass grating. Scour pipe of size as specified by the Engineer shall be provided with a bend and pipe piece and plug terminating outside the tank wall.

Ball cocks used for tanks shall be high pressure ball cocks with brass lever rods and polythene ball floats. The ball floats shall conform to Indian standard which shall be hammer tested.

CSEB Masonry Buildings shall be fixed in position as shown on drawing or as directed by the Engineer.

Method of Measurement: Measurement for the CSEB Masonry Buildings will be made per unit set of complete installation.

1838.5 Toilet paper holder

Toilet paper holder shall be of CP as per BILL OF QUANTITIES. It shall be fixed in wall in a neat Workmanlike manner. Recess in walls, where required, shall be provided. It shall be fix with C.P. brass screws, where required.

Method of Measurement: Measurement for the Toilet Paper Holder will be made per unit set of complete installation.

1838.6 Soap tray or soap dish

Soap tray or soap dish shall be CP as per BILL OF QUANTITIES. Soap tray shall be fixed in wall in a neat Workmanlike manner. Recess in walls, where required, shall be provided. It shall be fixed with C.P. brass screws, where required.

Method of Measurement: Measurement for the Soap Dish will be made per unit set of complete installation.

1838.7 Towel Rod

Towel rod shall be heavy type of C.P. brass with two brackets. The size of the rod shall be as specified on the drawing or Bill of Quantities. The brackets shall be firmly fastened by means of C.P. brass screws firmly embedded in the wall.

Method of Measurement: Measurement for the Towel Rod will be made per unit set of complete installation.

1838.8 Mirror

Mirrors shall be of approved make 5mm thick. All edged shall be rounded off. Mirrors shall be fixed to wall with brass chromium plated screws and washers. Mirrors shall be of beveled edge of sizes as specified in the Bill of Quantities.

Method of Measurement: Measurement for the Mirror will be made per unit set of complete installation as per size.

1838.9 C.P. Grating

Floor and urinal traps shall be provided with chromium plated grating, with rim of approved design and shape. Minimum thickness shall be 3mm.

Method of Measurement: Measurement for the CP Grating will be made per unit set of complete installation.

1838.10 C.P. Fittings

All C.P. fittings, additional bib cocks, cockroach trap etc. shall be of the best quality heavy pattern of approved make. All C.P. fittings shall be fixed in a Works man like manner and shall not carry tool marks and scratches.

Method of Measurement: No Measurement will be made for CP fittings except for the additional items in Bill of Quantities. All CP fittings are presumed to be installed with sanitary ware requirement. Measurement will be made for Additional CP fittings as per Bill of Quantities item per unit of installation.

1838.11 Kitchen Sink

Kitchen sink stainless steel 900x450x200mm depth with drain board 1mm thickness with Aerator/swan type sink mixer Hekken or equivalent.

Method of Measurement

Measurement for the Kitchen sink will be made per unit set of complete installation.

1838.12 Shower Set

Shower head with arm and flange of Roca, Kohler, Grohe or equivalent

Method of Measurement

Measurement for the Shower set will be made per unit set of complete installation.

1839 Pump

A Pumps shall be Pedrollo or Crompton Greaves or equivalent brand of said capacity and installed in pump house or shed including its structure and base plate as per drawings or supplied drawings. The pumps shall be installed with all wiring and electrical fixtures such as switches, wires, light, low & high level guard and pump control panel.

Method of Measurement

Measurement of works shall be made in unit piece of works as specified.

1840 Solar Water Heater

Solar Panels of the specified capacity shall be installed as specified in BOQ and as per manufacturer specification of Solarplus, Sunrise or equivalent.

- Flower design pressed on stainless steel shell for better looks and durability.
- Inner CSEB Masonry Buildings made of super SUS304 food-grade stainless steel plates welded by argon arc (keep water hot for up to 72 hours).
- 50 mm Polyurethane cellular padding insulation.
- Stainless steel supports that connect using nuts and bolts for firmness, stability and easy installation.
- Milk-White silicon glue ring seal where the vacuum tube connects to the inner CSEB Masonry Buildings.
- Adjustable tubes and support to ensure long life of vacuum tubes.

Method of Measurement

Measurement of works shall be made in unit set of works as specified.

1841 Deep Boring

Deep Boring shall be installed as per manufacturer specification & as per instruction of Engineer.

Note: Contractor shall be responsible to submit construction drawing.

Measurement

Measurement of works shall be made as specified in BOQ.

1842 Sewage Treatment Plant

Sewage Treatment Plant

shall be installed as per manufacturer specification & as per instruction of Engineer.

Note: Contractor shall be responsible to submit construction drawing.

Measurement

Measurement of works shall be made in for complete set as lump sum

1843 Water Treatment Filter Plant

Water Treatment Filter Plant shall be installed as per manufacturer specification & as per instruction of Engineer.

Note: Contractor shall be responsible to submit construction drawing.

Measurement

Measurement of works shall be made as specified in BOQ.

MAKE OF EQUIPMENT AND RECOMMENDED MANUFACTURES

1.	G. I. /M. S. Pipes	a.	Indian Tube Co. (TATA), HULAS or equivalent and as specified in BOQ
2.	G. I. Fittings	a.	UNIK or R or C Brand or as specified in BOQ
3.	Gate / Globe / Butterfly	a.	Leader, Zolotto or as specified in BOQ
4.	Sanitary ware	a.	Roca, Kohler, Duravit, or equivalent as specified in BOQ.
5.	C. P./S.S. Fitting and accessories	a.	Grohe, Roca, Kohler, Jaquar, Nova or equivalent as specified in BOQ.
6.	Mirror	a.	Modiguard or equivalent
7.	CPVC Pipes and Fittings	a.	Marvel, Mangalam, Panchakanya or equivalent
8.	Water Pumps	a.	Crompton, Kirloskar or equivalent
9.	uPVC Pipes and Fittings	a.	Marvel, Mangalam, Panchakanya or equivalent
10.	Roof Tank	a.	Panchakanya, Hilltake or equivalent

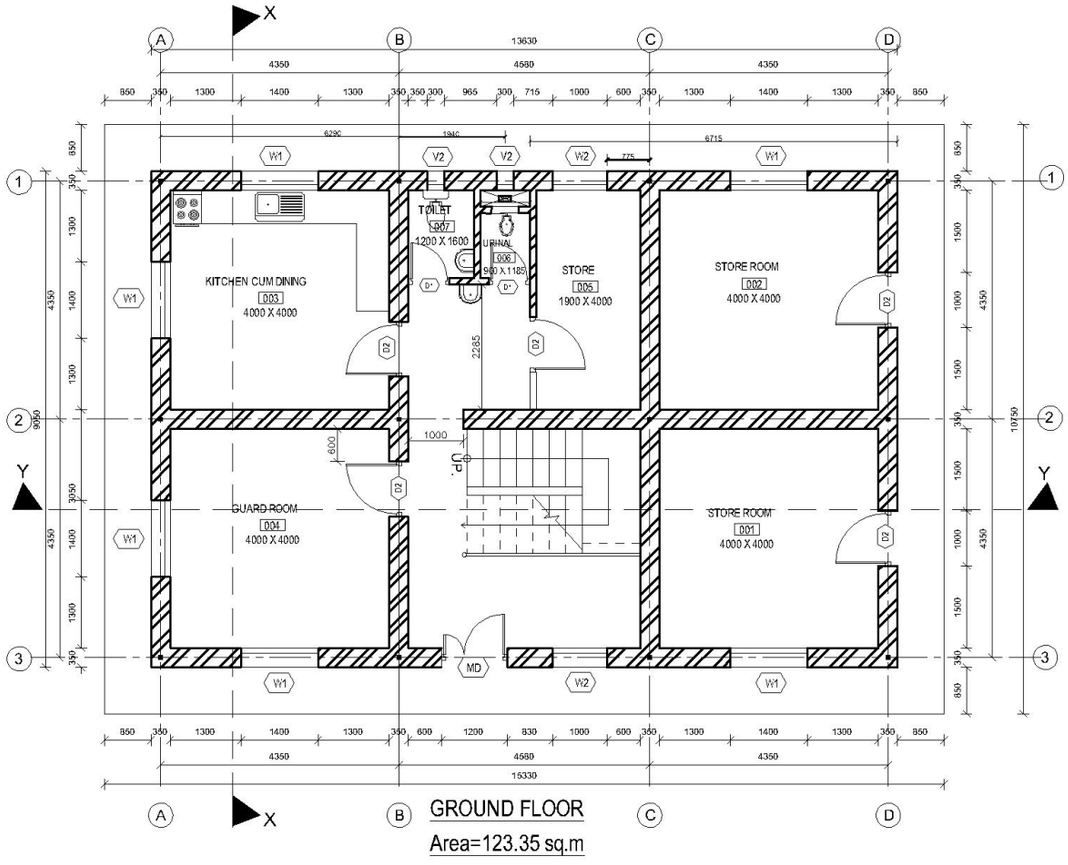
Drawings

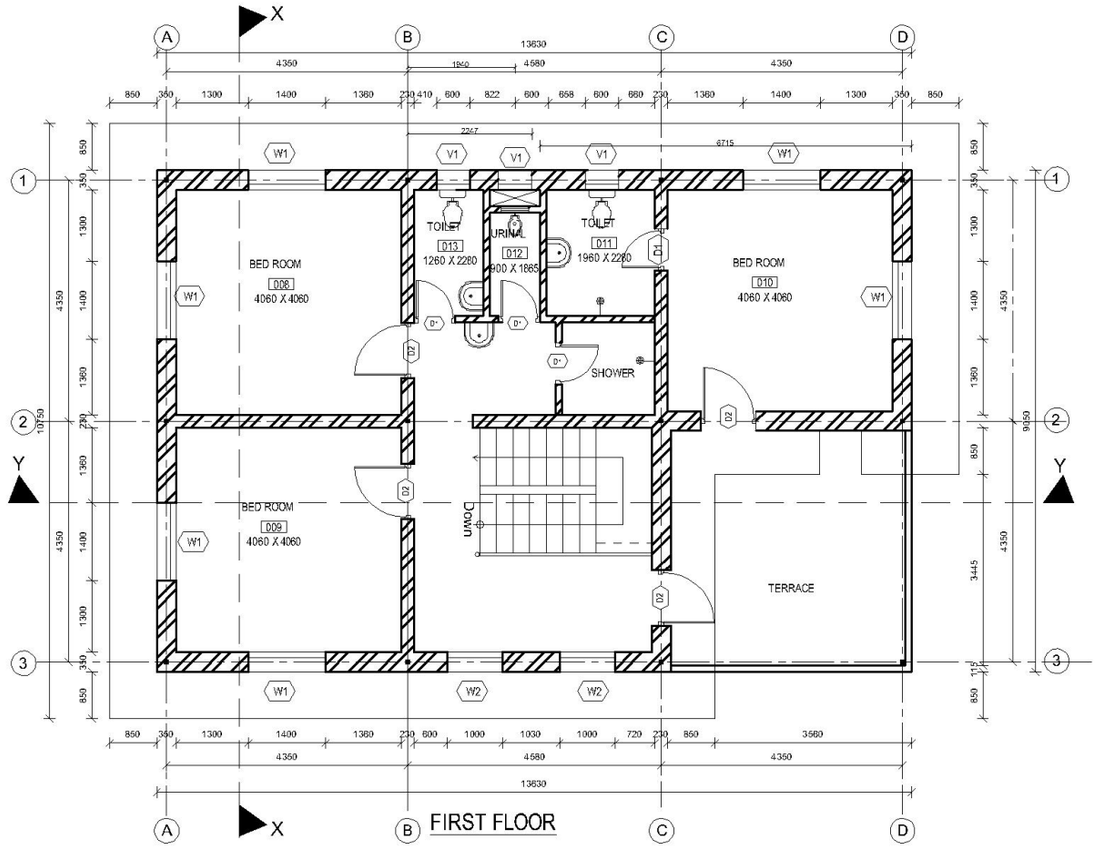
Note:

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

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

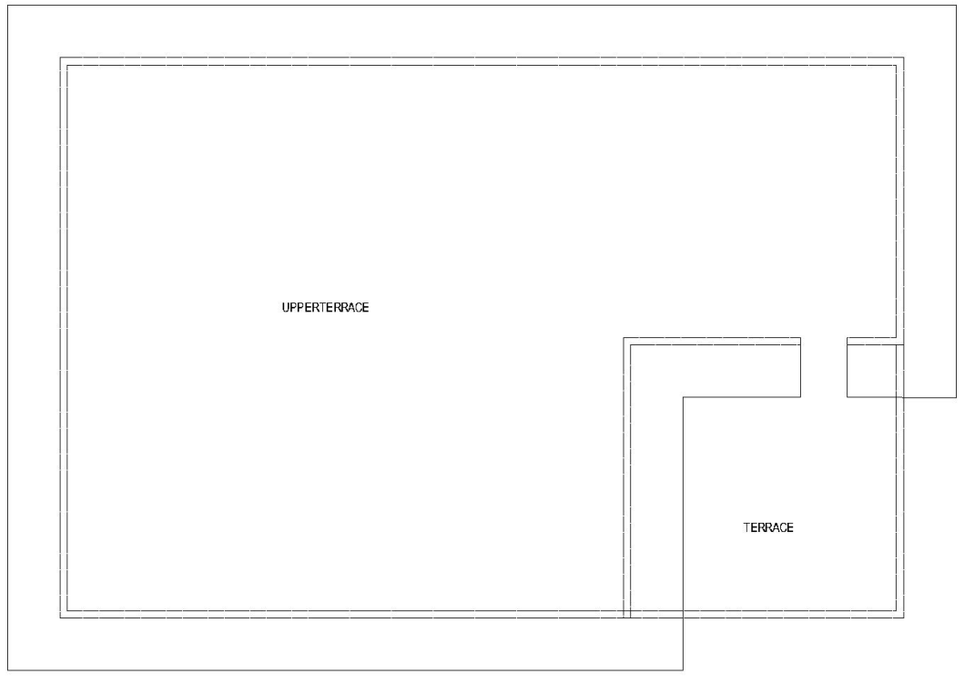
3. The construction drawings, even if not fully developed, must show sufficient details to enable bidders to understand the type and complexity of the work involved and the price the Bill of Quantities.



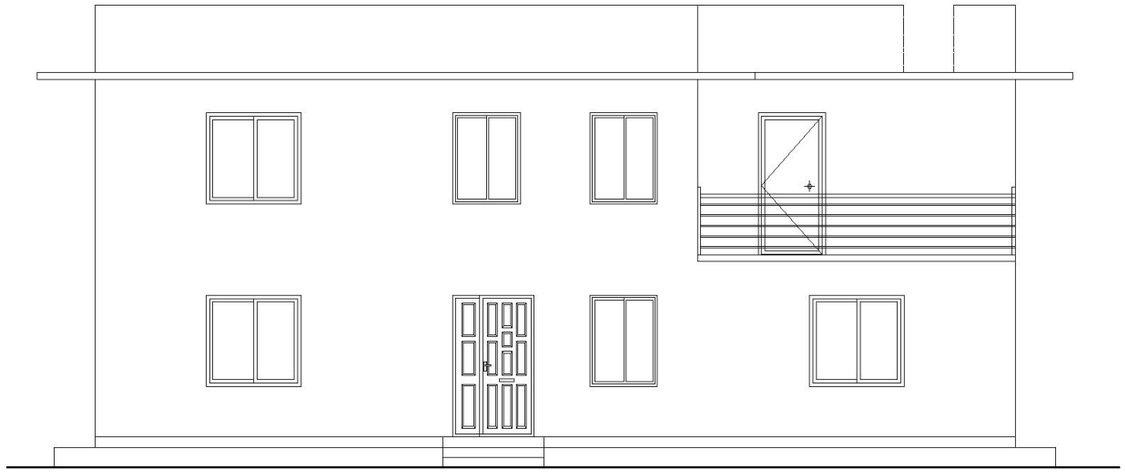


FIRST FLOOR

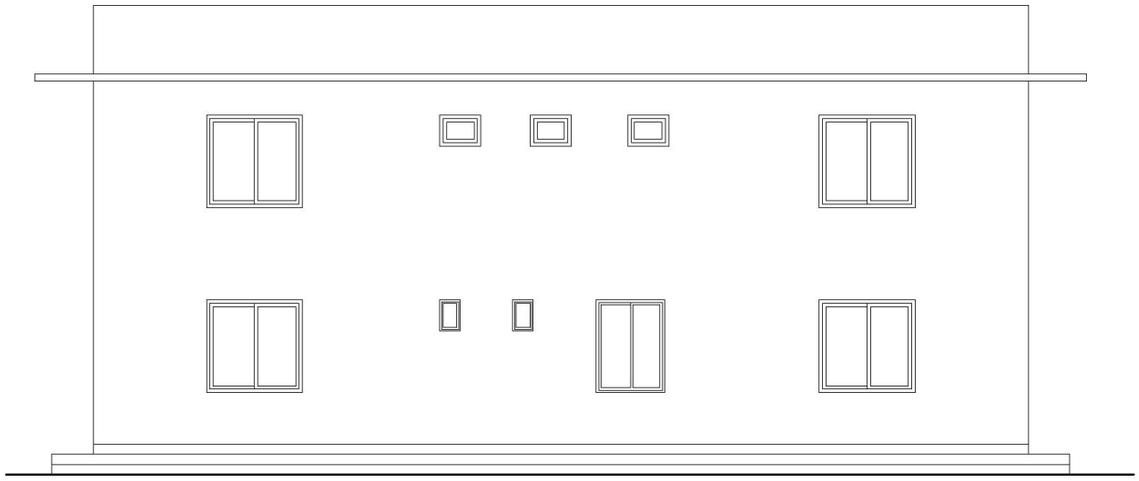
Area=103.90 sq.m



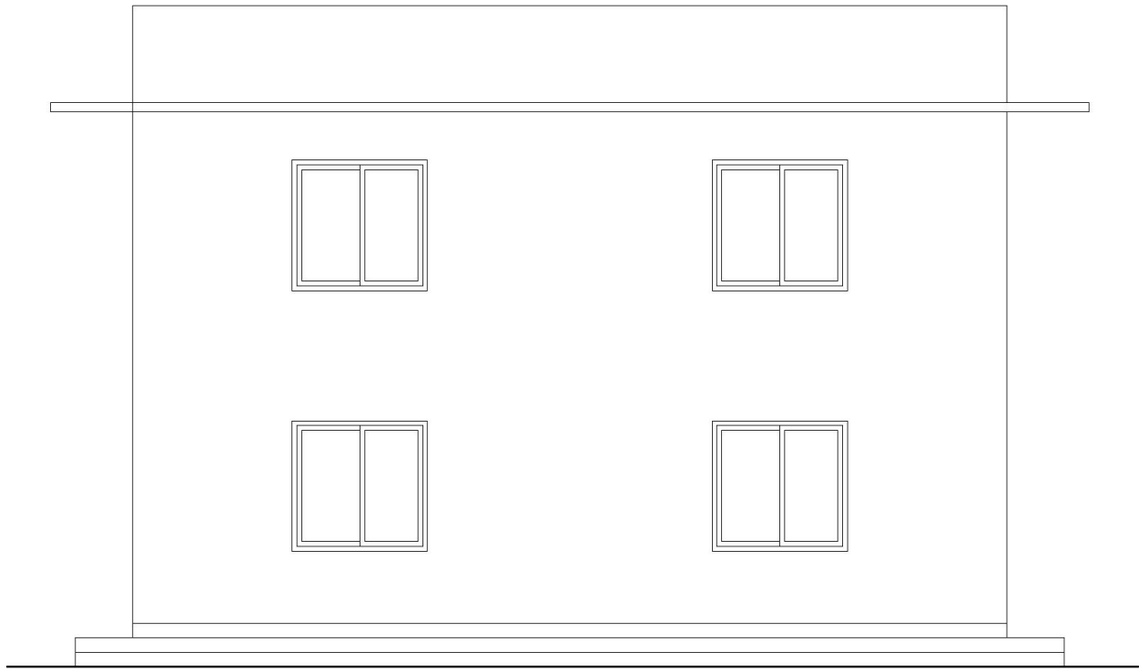
TOP FLOOR PLAN



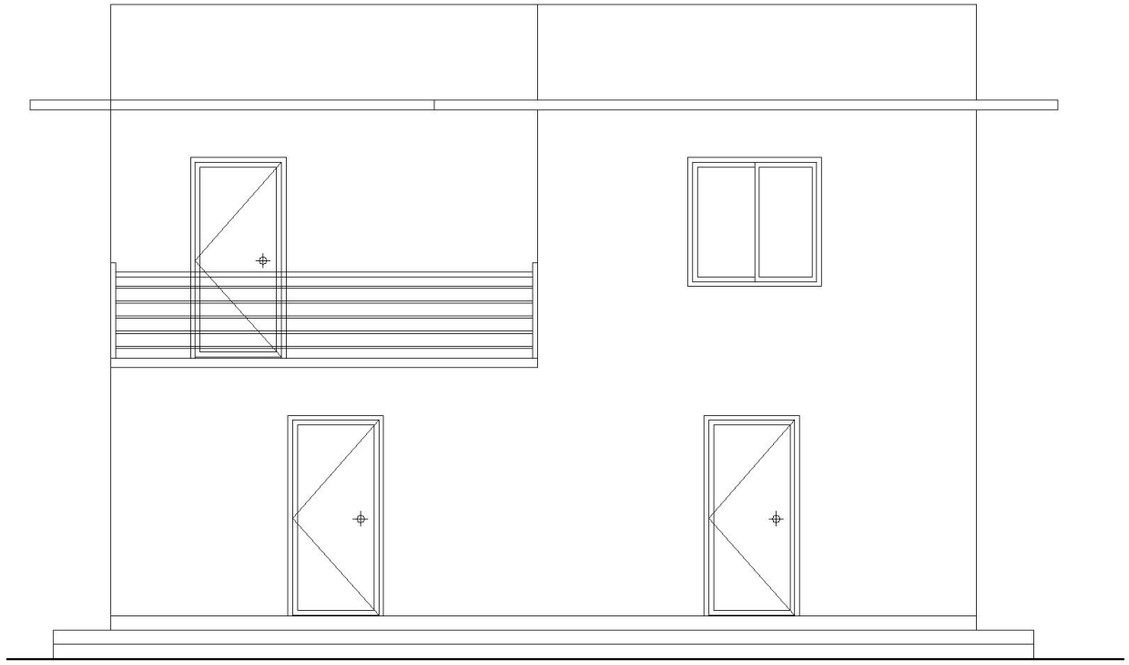
WEST ELEVATION



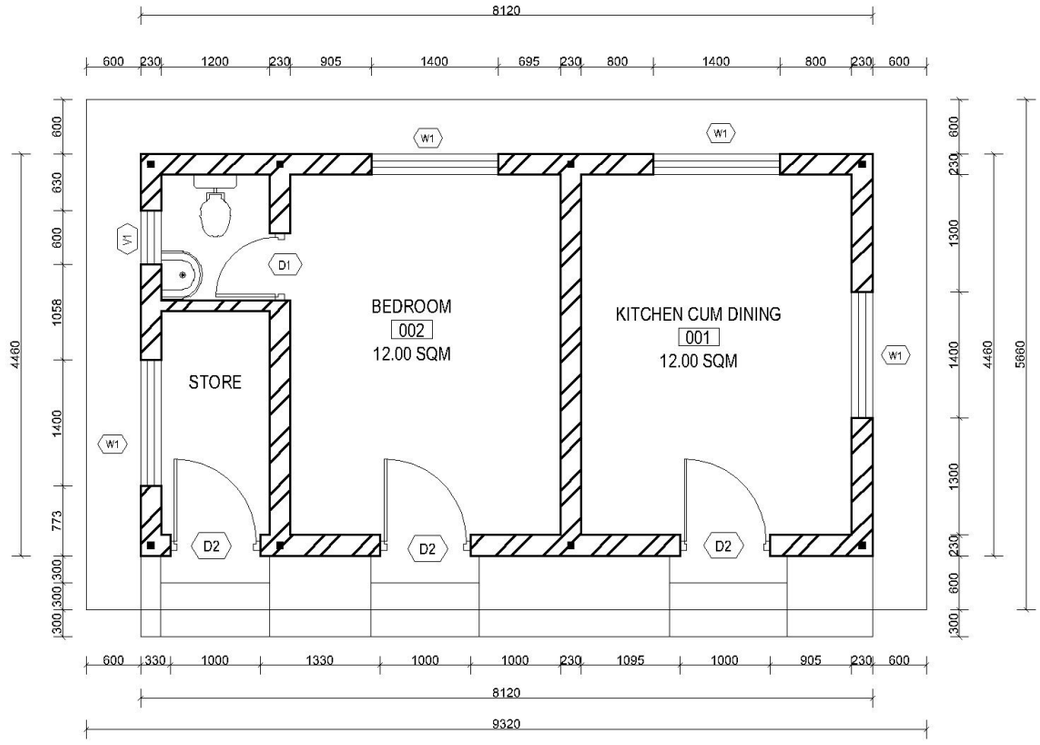
EAST ELEVATION



NORTH ELEVATION

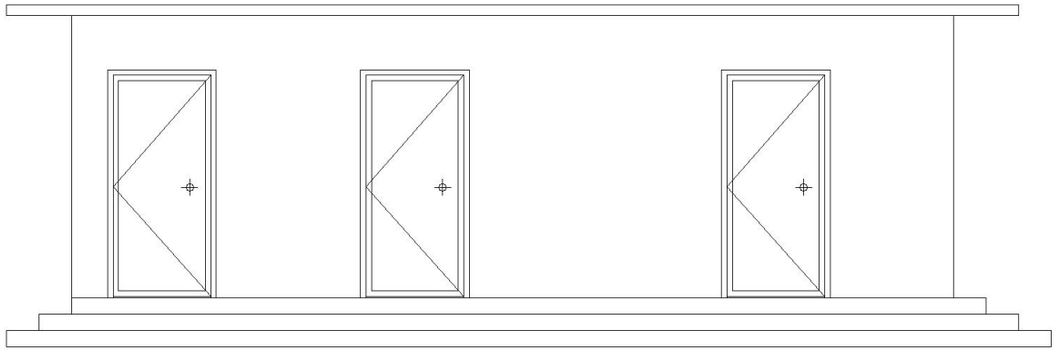


SOUTH ELEVATION



GROUND FLOOR

Area=36.22 sq.m



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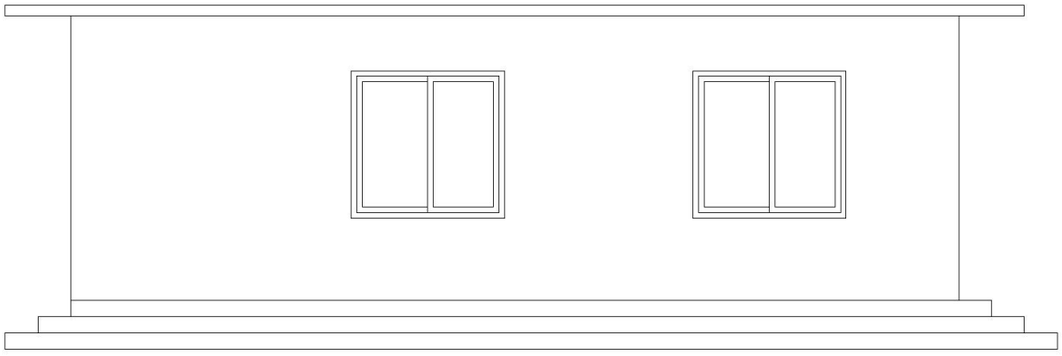

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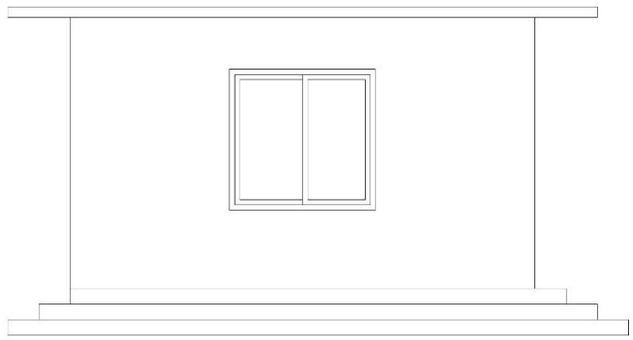
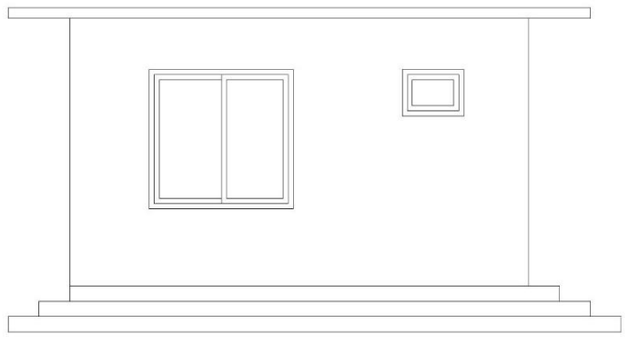
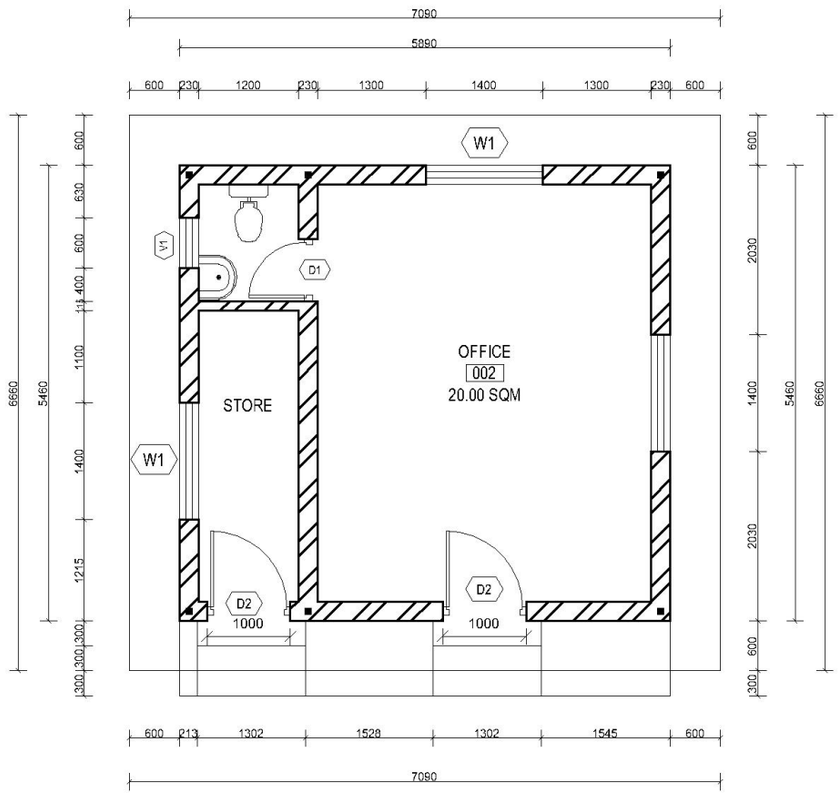


SOUTH ELEVATION

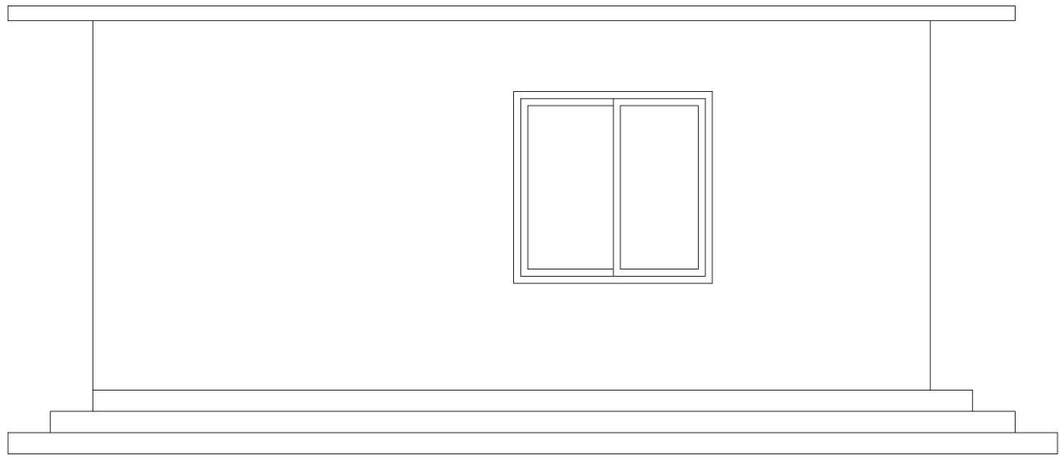


NORTH ELEVATION

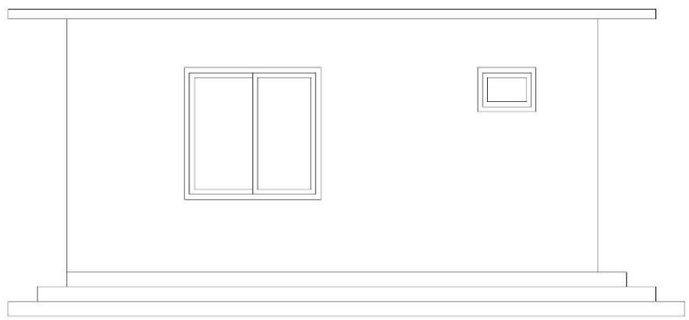


GROUND FLOOR

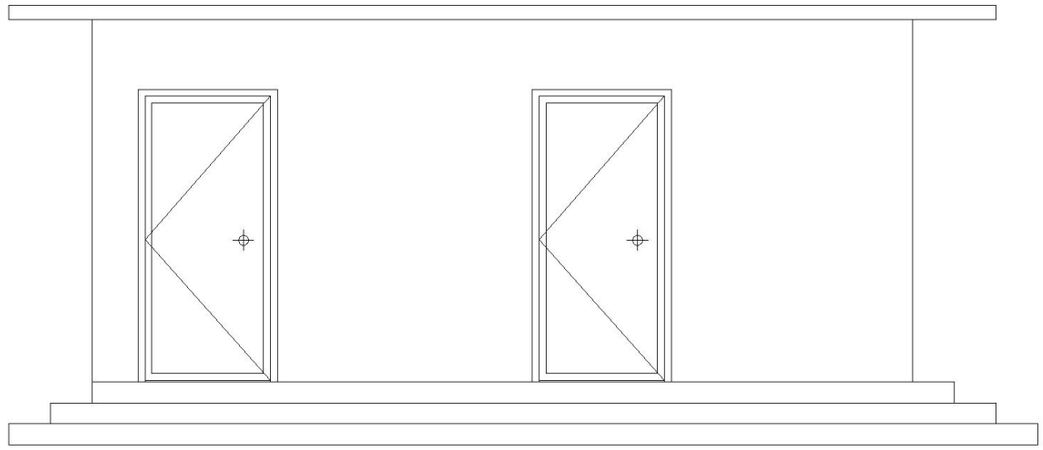
Area=32.15 sq.m



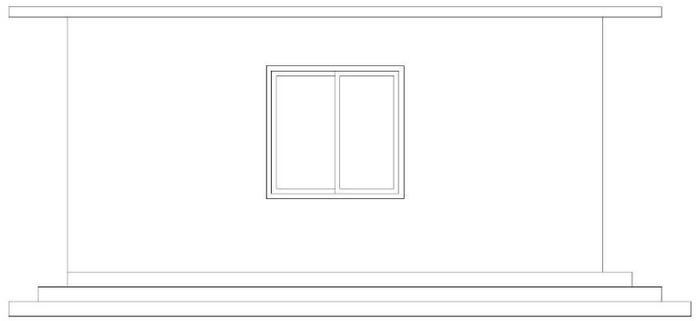
EAST ELEVATION



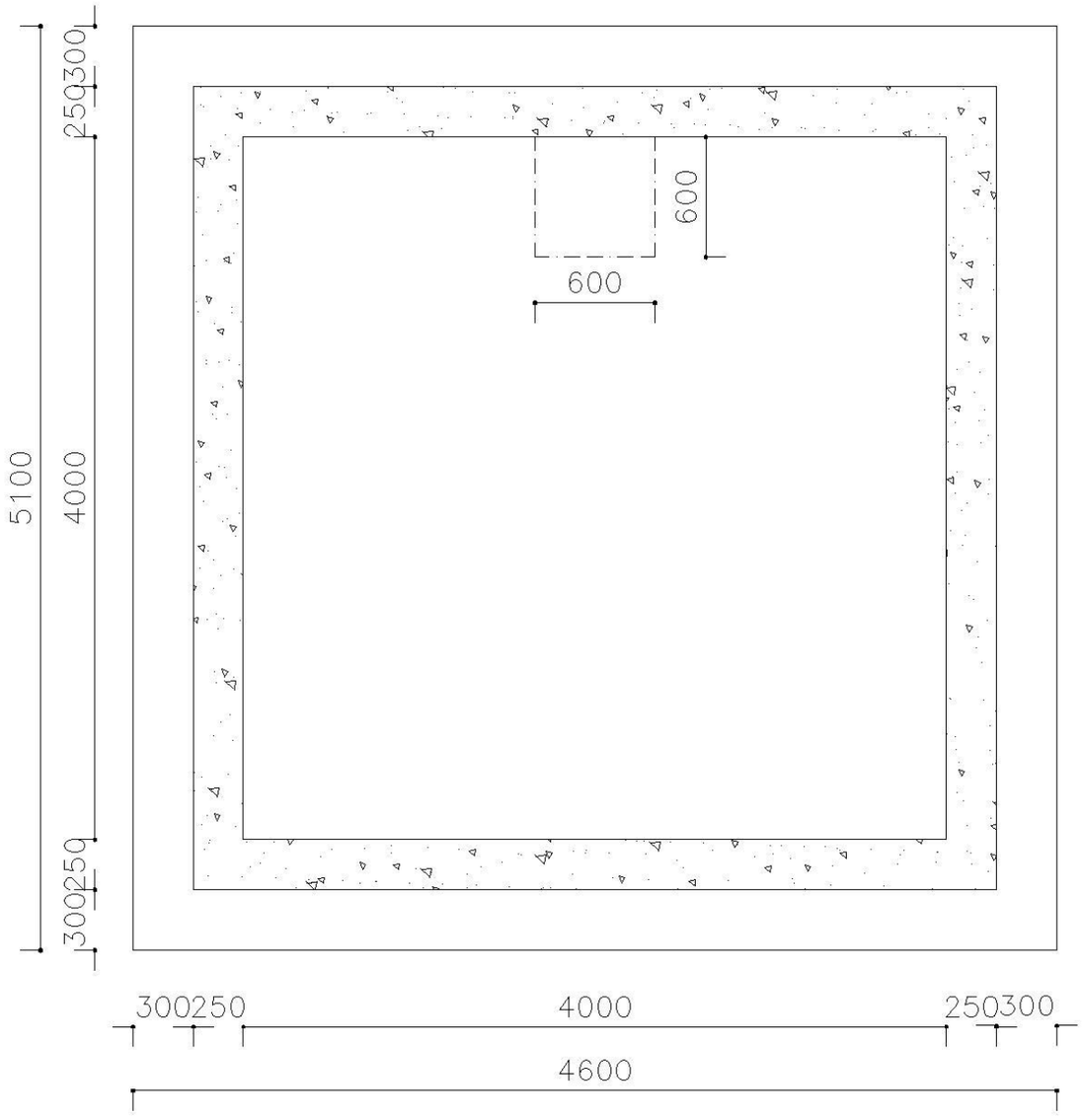
NORTH ELEVATION



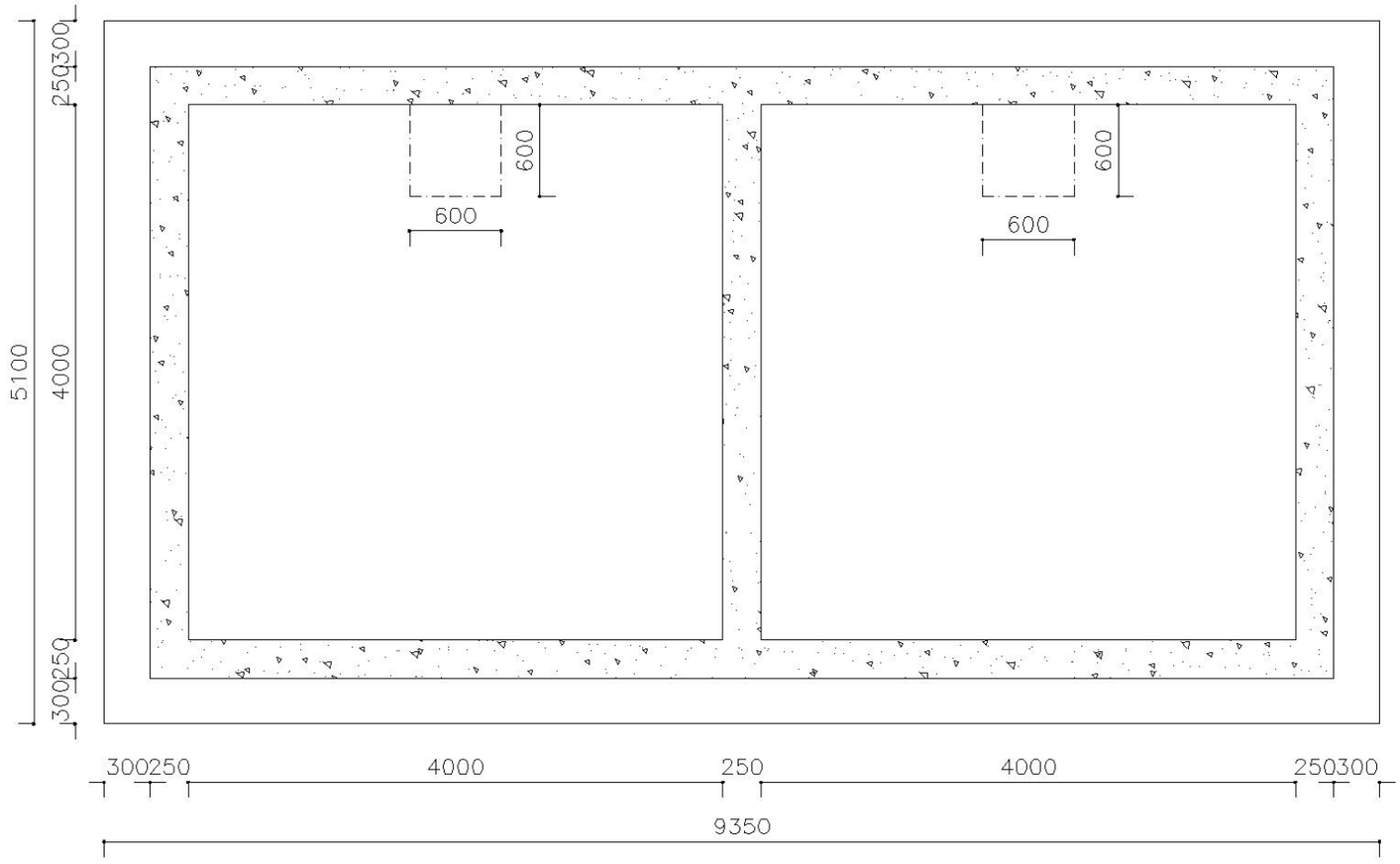
WEST ELEVATION



SOUTH ELEVATION



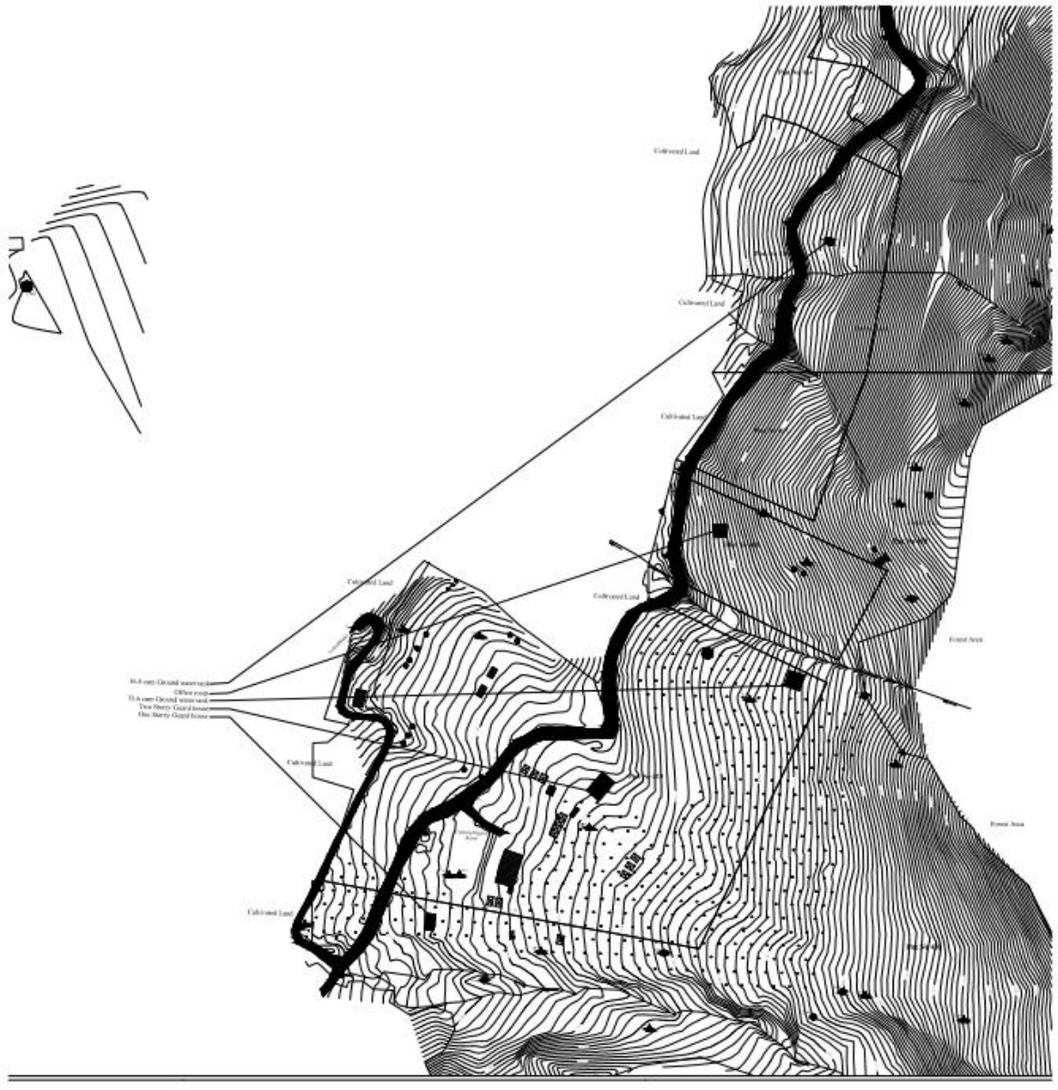
36.8 CUM WATER TANK



73.6 CUM WATER TANK

Supplementary Information

Master plan of all components



Personnel Requirements

Using Form PER-1 and PER-2 in Section IV (Bidding Forms), the Bidder must demonstrate it has personnel that meet the following requirements:

SN.	Position	Required No.	Academic Qualification *[When position demands]*	Total Work Experience [Years]	Experience in Similar Works [years]
1.					
2.					
3.					
4.					
5.					

Equipment Requirements

Using Form EQU in Section IV(Bidding Forms), the Bidder must demonstrate it has the key equipment listed below:

No.	Equipment Type and Characteristics	Min. Number Requirement
1.		
2.		
3.		
4.		
5.		

Section VI: Bill of Quantities[8]

Notes for Unit Rate Contracts:

Objectives

The objectives of the Bill of Quantities are

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

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

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

Content

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

(a) Preamble;
(b) Work Items (grouped into parts);
(c) Day works Schedule;
d) Provisional Sums; and
(d) Summary.

Preamble

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

Work Items

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

Day work Schedule

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

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

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

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[8] In lump sum contracts, delete "Bill of Quantities" and replace with "Schedule of Activities" throughout this section.

Provisional Sums

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.

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.

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

In separate sheet

Part III: CONDITIONS OF CONTRACT AND CONTRACT FORMS

Table of Clauses

Section VIII: General Conditions of Contract

[Name of Employer]

[Name of Contract]

This Section provides the General Conditions of Contract that will apply to the Contract for which the Biding document is issued.

General Conditions of Contract

A. 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. (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 Technical Bid and Price 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**.
	3.2. 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 X.
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 **For GoN Funded:** 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. **For DP Funded :** The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations. Bidders may propose subcontracting up to the percentage of total value of contracts as **specified in the SCC.** The Sub contractor shall meet the qualification requirement as **specified in SCC.**

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 the arbitration procedures in accordance with law of Nepal at the place within the territory of Nepal **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.
B. 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 **issuance of taking over certificate pursuant to clause 69.2**, 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[9]: The formulae will be of the following general type: $$pn = A + b\frac{Ln}{Lo} + c\frac{Mn}{Mo} + d\frac{En}{Eo} + etc.$$ 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;

[9] 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

	A is a constant, specified in the Bidding Forms- Table of Price Adjustment data, representing the nonadjustable portion in contractual payments;[10] 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 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)

[10] 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.

	"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 the Contractor 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 **unconditional bank guarantee from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law. The** validity **of bank guarantee shall be** 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 Nepal.in a form acceptable to the

	Employer in amounts equal to the advance payment. The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest shall not be charged on the advance payment.
	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 35.5 and ITB 40.1, 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 in Nepal 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 35.5 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 40.1 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 Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.
59. Dayworks	59.1 If applicable, the Dayworks 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 Dayworks 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 Dayworks subject to obtaining signed Dayworks 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. Project Manager'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 IX: Special Conditions of Contract

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

Special Conditions of Contract

A. General	
GCC 1.1 (q)	The Employer is ***Madan Bhandari University of Science and Technology, Sainbu, Lalitpur Metropolitan City, Ward No. 18, Nepal***
GCC 1.1 (v)	The Intended Completion Date for the whole of the Works shall be ***Six Months after work order intended completion date]*** *[If different dates are specified for completion of the Works by section("sectional completion" or milestones), these dates should be listed here]*
GCC 1.1(bb) & 10.1	The Project Manager is as defined by the employer in the work order The Project Manager and Engineer are synonyms.
GCC 1.1 (ee)	The Site is located at ***Chitlang and is defined in drawings No***
GCC 1.1 (hh)	The Start Date shall be **the date of work order**
GCC 1.1 (ll)	The Works consist of CSEB Rricks works on building construction RCC tanks and electrical and sanitary works in buildings
GCC 2.2	Sectional Completions are: Not applicable*.*
GCC 2.3(i)	The following documents also form part of the Contract Not applicable
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 13.1	For DP Funded/A ***[insert the following text if sub-contracting is permitted]*** Maximum percentage of subcontracting permitted is: **[*sub-contracting percentage should be same as in ITB 34.4*]% of the total contract amount** **Nature of Works that can be sub contracted:** 1. …….. 2. …….. **Qualification Criteria** The proposed sub-contractor shall meet the following requirements: 1) Completion of 80% of the quantity of the work being sub contracted 2) Average Annual Construction Turnover for the work being sub contracted should be at least 1.5 * V/T where V is the proposed value of sub contract and T is time in year. For contract duration of up to 1 year, T shall be "1". Financial Resources**:** The sub contract must demonstrate that it has the financial resources to meet its

	current contract commitment plus three months' requirements for the sub contracted work.
GCC 14.1	Schedule of other contractors: ***.N/A***
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: ***…(a)… of insured amount]***[11] 3. The minimum cover for loss or damage to **immovable** Equipment***/plants*** is :***100 %*** **4.** The maximum deductible for insurance of Equipment***/plant*** is:***[insert value in percentage not exceeding 1 % of insured amount]*** 5. The minimum for insurance of other property is: ***[insert amount]***[12] with unlimited number of occurrences 6. The maximum deductible for insurance of other property is: ***[insert value in percentage not exceeding 1 % of insured amount]]*** 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 not less than 0.8 million]*** with an unlimited number of occurrences
GCC 20.1	Site Investigation Reports are: The bidder shall make his/her own investigations regarding field conditions
GCC 23.1	The following shall be designed by the Contractor Temporary structure
GCC 26.1	The Site Possession Date(s) shall be: 7 days from ***the date of Work order at Chitlang*** *[Note: If the Site is made available by section, the different dates should be listed here]*
GCC 30.1	The place of arbitration shall be: Kathmandu Nepal
C. Time Control	
GCC 34.1	The Contractor shall submit for approval a Program for the Works within 7 days from the date of the Letter of Acceptance.
GCC 34.3	The period between Program updates is **.30** days. The amount to be withheld for late submission of an updated Program is NRs 100,000
D. Quality Control	
GCC 42.1	The Defects Liability Period is: ***365*** days

[11] (1) Insert value in percentage [For works with value up to 250 million not more than 0.5 %, for works with value 250 million to 1 billion not more than 0.2 % and for works with value above 1 billion not more than 0.1 %]. It should be noted that lower value of deductible is to be inserted for higher value of works.

[12] The amount depends on location, environment of construction site etc. and hence differs case to case. Suitable amount should be inserted depending upon site condition and surrounding environment.

E. Cost Control	
GCC 49.1	***[insert the prevailing interest rate****]N/A*
GCC 53.1	The Contract ***is not"]*** subject to price adjustment, and the following information regarding coefficients ***[Insert "does" or "does not"]*** apply. The coefficients and indices for adjustment of prices in Nepalese Rupees shall be as specified in the Table of Adjustment Data submitted by bidder together with the Letter of Price Bid which is approved by the Project manager.
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.
GCC 53.7	The Price Adjustment amount shall be limited to a maximum of: For GoN Funded: ***[Insert percent]*** percentage of the initial Contract Amount ***[normally 25 %]*** For DP Funded: **Not Applicable**
GCC 54.1	The proportion of payments retained is: For GoN Funded: 5 (five) percent For DP Funded: …….. ***[Insert 5 (five) to 10 (ten) percent]***
GCC 55.1	The liquidated damages for the whole of the Works are 0.05 Percent of the final Contract Price per day. The maximum amount of liquidated damages for the whole of the Works is 10 Percent of the final Contract Price.
GCC 56.1	The Bonus for the whole of the Works is 0.05 Percent per day. The maximum amount of Bonus for the whole of the Works is ***[Insert Amount]*** of the final Contract Price.
GCC 57.1	The Advance Payments shall be: ***[Insert amount]*** and shall be paid in two equal installments and to the Contractor.***[specify how and when the installments will be paid]***
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 ***[Insert percentage]***[13] 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: …….. ***[Insert required percent]*** ***[insert amount including an additional amount based on ITB 40.1 and/or ITB 35.5 if the Employer has increased the Performance Security amount]***
G. Finishing the Contract	
GCC 71.1	The date by which operating and maintenance manuals are required is; required to be submitted 7 days prior to the submission of final invoice
GCC 71.2	The date by which "as built" drawings are required is: 7 days before completion The amount to be withheld for failing to produce "as built" drawings and/or

[13] ***[% of advance payment × 100/(80-30)]***

	Operating and maintenance manuals is: NRs 2,00,000
GCC 72.3 (i)	The maximum number of days is: **200**
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 X: Contract Forms

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

Letter of 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 Technical and Price 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 *[For GoN funded project]*
   (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, Date

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

Witness, Name, Signature, Address, Date

5. List 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 in Nepal.)

..... ***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 guaranteeis 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.

Advance Payment Security

(On letterhead paper of the Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.)

…….. 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.

Retention Money Security

Demand Guarantee

_____ *[Guarantor letterhead]*

Beneficiary: _____ *[Insert name and Address of* Employer*]*

Date: _____*[Insert date of issue]*

RETENTION MONEY GUARANTEE No.: *[Insert guarantee reference number]*

We have been informed that _____ *[insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Applicant") has entered into Contract No. _____ *[insert reference number of the contract]* dated _____ with the Beneficiary, 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, the Beneficiary retains moneys up to the limit set forth in the Contract ("the Retention Money"), and that when at least eighty (80) percent of the whole works have been completed, payment of *[*insert the amount of the Retention Money*]* is to be made against a Retention Money guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ *[insert amount in figures]* (_____) *[amount in words]*[1] upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without your needing to prove or show grounds for your demand or the sum specified therein.

This guarantee shall expire no later than the …. day of ……, 2… [2], and any demand for payment under it must be received by us at the office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

_____

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

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1 *The Guarantor shall insert the amount of the Retention Money.*

2 *Insert the same expiry date which is 30 days more than the end of Defect Liability Period. The Employer should note that in the event of an extension of this date 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.*

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.

Bill of Quantities

1 Provisional Sum

Procument Item Details

SL. No	Item Description	Unit	Quantity	Unit Rate(NPR)	Amount(NPR)
1	Provide, erect and maintain project site notice board (2mx2m) with metal frame, posts and necessary accessories up to the completion of the project as per specifications and instructions of the site engineer all complete.	Job	1.0	10000.0	10,000.00
2	Insurance Premium for the work,plant and materials damage for contract work for all risk including Roit, Strike,Damage,Malicious damage and Terrorism for contract work for 2 years +1 year maintenance period.	Job	1.0	29405.0	29,405.00
3	Insurance Premium for the Insurance of owner and consultant staff (named) RS 10,00,000.00 per person for 5 persons with unlimited number of occurances for two years	Job	1.0	44220.0	44,220.00
4	Insurance Premium for construction equipments and machines with value of Rs 20,00,000.00 for 2 years.	Job	1.0	8040.0	8,040.00
5	Insurance Premium for third party liability personal only per person Rs 500,000.00 for 5 persons first 2 years with unlimited number of occurance.	Job	1.0	10020.0	10,020.00

2 Construction work

2.1 Building completion work

Procument Item Details

SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
1	Concrete Test : Cubes or cylinder crushing	Nos	114.0			
2	Brick test: Brick crushing Test	Nos	6.0			
3	Brick test: Water absorption test	Nos	6.0			
4	Brick test: Brick Efflorescence test	Nos	6.0			
5	U.T.M. Tensile Strength Test: 8 mm dia	Nos	9.0			
6	U.T.M. Tensile Strength Test: 12 mm dia	Nos	9.0			
7	U.T.M. Tensile Strength Test: 16 mm dia	Nos	9.0			
8	Preparation of As built Architectural, Structural, Sanitary & Electrical drawings per instruction all complete.	Job	1.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
9	Site Clearance Works: Clearing & uprooting thin vegetation, grubbing their roots and disposal far from the construction sites also leveling the surface as per instruction, specification and drawing all complete.	Sq.m	2596.0			
10	Earthwork in excavation in perfect line and level using hydraulic excavator in foundations and stacking to the appropriate location near site for refill all complete as per instruction, specification and drawing all complete.	Cu.m	578.0			
11	Backfilling of excavated earthwork in layers of 150mm with sprinkling water and compaction in foundation, flower bed, steps etc as per instruction, specification and drawing all complete.	Cu.m	244.0			
12	Disposal of excavated soil outside from site area including labour and transportation all complete as per instruction, specification all complete.	Cu.m	396.0			
13	Dewatering works with the use of pressure pumps during construction phase as per design, drawings, specifications and instructions of the site engineer all complete works.	hrs.	332.0			
14	Stone Soling works in foundation with supplying of approved quality of stone laying, ramming and levelling as per design, drawing, specification and instruction of site engineer	Cu.m	61.0			
15	PCC: WorksPlain cement concrete in Foundation with cement, sand and crushed aggregate in 1:3:6 ratio including Mixing, laying, curing and finishing all complete as per instruction, specification and drawing.	Cu.m	30.0			
16	RCC Works: Structural concrete in any form,size shape and level for all R.C.C. works with cement, sand and crushed aggregate in Nominal mix 1: 1.5:3 ratio (M20) including Mixing, laying, compacting, finishing and curing all complete as per instruction, specification and drawing.	Cu.m	151.0			
17	RCC: Providing, straightening, cleaning, cutting, fabricating, bending and placing TMT(Fe 500) for stirrups, ties and main reinforcement bars and binding the bars with 18 gauge annealed wire for tying them at each junction as per design and details for all types of RCC elements including all waste and cut pieces, provision for spacers, chairs, providing and placing cement mortar (1:1) cover blocks to keep the bars in the intended position at all levels as per drawing, specification and approval of engineer all complete.	Kg	20770.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
18	Form Works: Centering and shuttering with approved 19mm waterproofing plywood for all R.C.C.works of any shape size and at any level with necessary propping scaffolding, staging supporting. Cutting holes for utilization works and removal of formwork and lead upto 30 m etc all complete as per instruction, specification and drawing in Slab	Sq.m	1341.0			
19	Good quality CSEB Block in 1:4 C/S mortar in superstructure in perfect line level finish including wetting the blocks, racking the joints and curing the work for at least 7 days all complete.	Cu.m	146.7			
20	Stone masonary work in (1:6) cement sand mortar with approved quality stone in perfect line and level including wetting the bricks, packing the joints and curing, with necessary scaffolding work, including supplying of all materials , labour, lead and lift work as per design, drawings, specifications and instructions of the site engineer all complete works.	Cu.m	219.62			
21	Supplying and laying 12.5 mm thick cement plastering work in 1:4 cement mortar on walls of good finish including cleaning and wetting the surface and curing the work all complete as per specification and approval of site Engineer	Sq.m	2144.0			
22	Providing drip edge around the edge of all the projected slab.	R.m.	109.62			
23	Supplying and applying 50 mm thick Plain cement screeding work in 1:2:4 with cement, sand and crushed aggregate including mixing, laying, compacting and wetting all complete in perfect line and level as per drawings, specifications and approval of site Engineer.	Sq.m	522.0			
24	Provide and laying 3mm cement punning cement sand (1:1) including cleaning, watering, curing the laid surface all complete as per instruction & specification.	Sq.m	831.0			
25	Painting work with two coat plastic emulsion paint on inner wall and ceiling surfaces along with one coat of primer with approved colour and proper finishing , work all complete as per specification and approval of site Engineer.	Sq.m	1302.0			
26	Supplying and Painting two coat weather proof paint (Apex or equivalent) with one coat primer on outer wall surfaces with approved colour and proper finishing , work all complete as per specification and approval of site Engineer.	Sq.m	715.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
27	Two cost of Enamel paint over one coat of primer on wooden with approved colour and proper finishing , work all complete as per specification and approval of site Engineer.	Sq.m	65.0			
28	Three coats of Wood Polish in ready made teak wood door	Sq.m	35.93			
29	Salwood chaukhat(Nepali Agrakh) frame works for doors as approved by site incharge including the timber shall be seasoned and matured, Free from wraps, Knots holes and other defects all complete as per specification, instructions and drawing.	Cu.m	0.88			
30	Supplying and fitting Ready made Teak wood Doors, special (Seasoned and Poisoned treated ,one side teak and other side water proof ply fitting) with all necessary hardware all complete as per specification, instructions and drawing.	Sq.m	36.0			
31	Supply and fixing 101 x 45 x 1.5 mm ivory powder coated double glazing sliding aluminium window section including 21mm clear vacuumed glass, mosquito net, roller, lock, silicone, necessary hardware and all complete at site.	Sq.m	43.0			
32	Supplying and fixing of approved quality 300*300 Non-Skid tile on floor with boader in 1:4 cement sand mortar in perfect line and level , Work all complete as per design, drawings, specification and approval of site Engineer.	Sq.m	155.0			
33	Supplying and fixing of approved quality wall tile on wall surfaces with boader in 1:4 cement sand mortar in perfect line and level , Work all complete as per design, drawings, specification and approval of site Engineer.	Sq.m	80.0			
34	Supplying and fixing of approved quality non-skid tile skirting in 1:6 cement sand mortar in perfect line and level work as per design, drawings, specifications and instructions of the site engineer all complete works.	R.m.	80.0			
35	Supplying and fixing of approved quality vertified porcelain floor tile (600x600mm) on inner room, terrace, etc(somany, kajaria or equivalent) skirting in 1:4 cement sand mortar in perfect line and level works as per design drawing, specification and instruction of site engineer all complete works.	R.m.	46.0			
36	Supplying and laying 16 mm thick granite or equivalent on Floor with 20mm thick 1:2 cement sand mortar in perfect line and level including polishing as per design, drawings, specifications and instructions of the site engineer all complete works.	Sq.m	6.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
37	Providing & Fixing Laminated parquet German made (egger or equivalent brand) having the size of 1292 x 192 x 8 mm with approved color, design & Pattern etc. by the architect or site in charge. The parquet should be duly tested in accordance to European standard; Abrasion resistance has AC 4 P 4.000 as per EN 13329; Impact resistance has IC 2 as per EN 13329 annex F standard; Flame resistance has Cfl as per EN ISO 11925 - 2 standard; Thickness swelling has ?20 % to ?18% as per EN 13329 annex G standard annex E;, including all the required accessories as per given drawing or design to complete the job. 20 years warranty for domestic use according to egger company.	Sq.m	50.0			
38	Providing & fixing SCG Smart-Wood fascia board, size 4”x13.45’x 12 MM thick, covering the gap between parquets & the wall joints; working as skirting profile providing required support for expansion & contraction of parquets during different seasons.	R.m.	49.0			
39	Supplying and fitting of railing with 50mm circular stainless handrail combined with 25mm railing in between ground and top railing including welding, joints and primer painting as per drawing and instructions all complete	R.m.	15.0			
40	Supplying and fixing of spiral staircase with 100Mm black pipe post, 20mm squire pipe railing , 40M handrail, width of staircase 75cm including red oxide primer coat and necessary fittings	R.m.	3.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
41	Providing and applying single component, cold-applied, Poly Urethane waterproofing membrane "Roof Guardi (p) which cures by reaction with atmospheric moisture to form a tough but flexible waterproofing membrane, having tensile strength of 1 MPa as per ASTM D 412, elongation capacity of 500% as per ASTM D 412, with solid content more than 80%, Hardness, Shore A of 50, having specific Gravity of 1.45 as per IS 101/1964 . This seamless waterproof membrane shall be applied in 1 coat by using airless spray or in 2 coats by roller / brush to achieve a total DFT of 1 mm consuming 1.2Kg/Sqm, applied on the prepared concrete substrate, including priming (though priming is generally not required for good concrete substrate) if any, continued along the wall by overlapping the coat for a minimum of 300mm and terminated in to a groove of size 6mmx10mm cut along the length of the wall and sealed all complete works as per specification and instruction of site engineer.	Sq.m	354.0			
42	Elastocrete cementitious elastomeric water proofing coating 2 components capacity per kg. 6 sq.ft 2 coat including supply and applying all complete work	Sq.m	201.0			
43	Light wiring for AC circuit, with required materials and labour all complete Wiring installation for Lights and fan on Mains / Essential supplies with mains and submains running on walls and ceiling with main cable 2 x 2.5 sq. mm and 2x1.5 sq.mm. for all loop circuit stranded flexible PVC insulated copper wire in neatly and symmetrically well placed 20 mm PVC conduit pipes , with all required fixing accessories including minor chasing / chasing of wall and making good of the same including removing existing circuits , if necessary , to allow for light points laid out and controlled as per new space allocations, drawing, specfication and instruction.	pts	88.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
44	Wiring installation for 2 way light Lights on Mains / Essential supplies with mains and submains running on walls and ceiling with main cable 2 x 2.5 sq. mm and 3x1.5 sq.mm. for all loop circuit stranded flexible PVC insulated copper wire in neatly and symmetrically well placed 20 mm PVC conduit pipes , with all required fixing accessories including minor chasing / chasing of wall and making good of the same including removing existing circuits , if necessary , to allow for light points laid out and controlled as per new space allocations, drawing, specfication and instruction.	pts	2.0			
45	6/16 Amp universal power points having main cable of 2 x 6 sq mm+ 1x2.5 sq mm as a main cable and 2 x4 sq mm + 1 x 1.5 sq mm for all loop circuits.	pts	4.0			
46	6/13 Amp universal power points having main cable of 2 x 6 sq mm+ 1x2.5 sq mm as a main cable and 2 x4 sq mm + 1 x 1.5 sq mm for all loop circuits.	pts	47.0			
47	6/16 amp Universal Pin single Power Socket flush mounted with GI Box	nos.	4.0			
48	6/13 amp Universal Pin single Power Socket flush mounted with GI Box	nos.	47.0			
49	Mirror light with 275 mm long with 5 watt LED light and inbuilt LED driver with output 380 lumen (Wipro/Siemens/Fumanali or equivalent)and approval by engineer (Sample to be submitted to client & consultant before installation.)	sets	7.0			
50	12 W LED down lighter surface mounted round type with inbuilt LED Driver & lumen output not less than 1100 lumen.	sets	22.0			
51	18 W LED down lighter surface mounted round type with inbuilt LED Driver & lumen output not less than 1280 lumen. (Wipro/Siemens/Fumanali or equivalent)and approval by engineer (Sample to be submitted to client & consultant before installation.)	sets	19.0			
52	6 W LED down lighter surface mounted round type with inbuilt LED Driver & lumen output not less than 600 lumen. (Wipro/Siemens/Fumanali or equivalent)and approval by engineer (Sample to be submitted to client & consultant before installation.)	sets	6.0			
53	6 W LED Indoor Decovative warm wall light	sets	7.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
54	12 W LED decorative gate top light	sets	2.0			
55	12W LED ceiling dome light	sets	21.0			
56	9" Exhaust Fan Philips, Crompton, or equivalent	Nos	7.0			
57	1 gang 1 way switch	nos.	13.0			
58	2 gang 1 way switch	nos.	4.0			
59	2 gang 2 way switch	nos.	2.0			
60	3 gang 1 way switch	nos.	8.0			
61	4 gang 1 way switch	nos.	4.0			
62	6 gang 1 way switch	nos.	2.0			
63	10 gang 1 way switch	nos.	1.0			
64	For 2 storey Building - 2Cx4 + 1x2.5 sq.mm multi strand copper cable from MDB to GDB	Rm	4.0			
65	For 2 storey Building - 2Cx4 + 1x2.5 sq.mm multi strand copper cable from MDB to FDB	Rm	12.0			
66	For 1 storey guard house - 2Cx4 + 1x2.5 sq.mm multi strand copper cable from MDB to SDB	Rm	4.0			
67	For 1 storey office room - 2Cx4 + 1x2.5 sq.mm multi strand copper cable from MDB to SDB	Rm	4.0			
68	Supply, installation, testing and commissioning of Flush mounting type Sub Distributor Panel Boards fabricated out of 16 SWG CRC Sheet steel duly treated under 7 rank process and finally painted with Epoxy Paint having lockable hinged top cover over inner metallic cover with following MCB/MCCB/CB/CONTACTORS/RELAYS shall be Siemens/ABB or equivalent.2 storey Guard House Ground Floor Distribution Board (GDB) comprising of following : Incoming 1* 16 A DP MVB 10 kA , 1 * 1 Phase sub meter . Outgoing 3 * 6 A SP MCB 10 k A,5x16A SP MCB 10KA,2x16A DP MCB 10KA, 3X30mA RCCB	sets	1.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
69	Supply, installation, testing and commissioning of Flush mounting type Sub Distributor Panel Boards fabricated out of 16 SWG CRC Sheet steel duly treated under 7 rank process and finally painted with Epoxy Paint having lockable hinged top cover over inner metallic cover with following MCB/MCCB/CB/CONTACTORS/RELAYS shall be Siemens/ABB or equivalent.2 storey Guard House First Floor Distribution Board (GDB) comprising of following : Incoming 1* 16 A DP MVB 10 kA , 1 * 1 Phase sub meter . Outgoing 3 * 6 A SP MCB 10 k A,5x16A SP MCB 10KA,2x16A DP MCB 10KA,1X30mA RCCB	sets	1.0			
70	Supply, installation, testing and commissioning of Flush mounting type Sub Distributor Panel Boards fabricated out of 16 SWG CRC Sheet steel duly treated under 7 rank process and finally painted with Epoxy Paint having lockable hinged top cover over inner metallic cover with following MCB/MCCB/CB/CONTACTORS/RELAYS shall be Siemens/ABB or equivalent.1 storey Guard House Ground Floor Distribution Board (GDB) comprising of following : Incoming 1* 16 A DP MVB 10 kA , 1 * 1 Phase sub meter . Outgoing 3 * 6 A SP MCB 10 k A,5x16A SP MCB 10KA,2x16A DP MCB 10KA, 1X30mA RCCB	sets	1.0			
71	Supply, installation, testing and commissioning of Flush mounting type Sub Distributor Panel Boards fabricated out of 16 SWG CRC Sheet steel duly treated under 7 rank process and finally painted with Epoxy Paint having lockable hinged top cover over inner metallic cover with following MCB/MCCB/CB/CONTACTORS/RELAYS shall be Siemens/ABB or equivalent.1 storey Office Room Ground Floor Distribution Board (GDB) comprising of following : Incoming 1* 16 A DP MVB 10 kA , 1 * 1 Phase sub meter . Outgoing 2 * 6 A SP MCB 10 k A,3x16A SP MCB 10KA	sets	1.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
72	Supply installation, testing and commissioning of Wall free standing mounting type electrical panel boards fabricated out of 14 SWG CRC sheet steel duly treated under 7 tank process and finally painted with Epoxy paint having lockable hinged top cover over inner, hinged metallic cover with Hylam supported busbars at 2.1 amperes per sq. mm cross section of the copper bus bar:, as per single line diagram. MCB/MCCB/CB/CONTACTORS/RELAYS shall be Siemens/ABB equivalent. 2 storey guard house Main Distribution Board (MDB) comprising of following: Incomer: 1 x 16A DP MCB, 10kA, Outgoings:3 x 16A DP MCB, 10kA, 1 x 1 phase submeter	sets	1.0			
73	Supply installation, testing and commissioning of Wall free standing mounting type electrical panel boards fabricated out of 14 SWG CRC sheet steel duly treated under 7 tank process and finally painted with Epoxy paint having lockable hinged top cover over inner, hinged metallic cover with Hylam supported busbars at 2.1 amperes per sq. mm cross section of the copper bus bar:, as per single line diagram. MCB/MCCB/CB/CONTACTORS/RELAYS shall be Siemens/ABB equivalent. 1 storey guard house Main Distribution Board (MDB) comprising of following: Incomer: 1 x 16A DP MCB, 10kA, Outgoings:1 x 16A DP MCB, 10kA, 1 x 1 phase submeter	sets	1.0			
74	Supply installation, testing and commissioning of Wall free standing mounting type electrical panel boards fabricated out of 14 SWG CRC sheet steel duly treated under 7 tank process and finally painted with Epoxy paint having lockable hinged top cover over inner, hinged metallic cover with Hylam supported busbars at 2.1 amperes per sq. mm cross section of the copper bus bar:, as per single line diagram. MCB/MCCB/CB/CONTACTORS/RELAYS shall be Siemens/ABB equivalent. 1 storey Office Main Distribution Board (MDB) comprising of following: Incomer: 1 x 16A DP MCB, 10kA, Outgoings:1 x 16A DP MCB, 10kA, 1 x 1 phase submeter	sets	1.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
75	Earthing System: Copper Rod earthling system - copper electrode (1800x17.2 mm), salt, charcoal dust, 6 sq. mm Multistrend bare copper conductor with solid CAD weld , Copper Nut Bolts with spring Washer & watering 65 mm dia PVC pipe & its installation in a whole as per dwg standard. Earthing common between DB.	sets	3.0			
76	Porcelain clay white glaze European Pattern Comode with cistern , slow falling seat cover One piece Ellisa, Plaza, mogen (American standard) Cotto or equivalent	Set	5.0			
77	White glazed porcelain clay wall hung basin, (Duravit, Grohe, American Standard, Thai or eqv.) complete set.	Set	7.0			
78	Large Flat back Urinal 61x41x38 cm size	Set	2.0			
79	1000 litre stainless steel WATER TANK	Set	4.0			
80	CHROME PLATE TOILET PAPER HOLDER	Set	5.0			
81	STAINLESS STEEL TOWEL ROD 1.5x45 cm Heavy	Set	5.0			
82	CHROME PLATE SOAP DISH.	Set	11.0			
83	CP Glass Shelf 22" with guard rail with glass	Set	7.0			
84	Looking Mirror Modi guard 450x600mm (18"x 24")	Set	7.0			
85	Stainless Steel Shower Rose	Set	3.0			
86	Stainless steel telephonic Commode spray	Set	5.0			
87	Small Kitchen Sink 60X45x20mm with brackets 32mm bottle trap, 32mm CP waste coupling with CP chain and rubber plug, 15mm fancy type piller cock and ½"x18" pipe connector.	Set	2.0			
88	15mm Stainless Steel Bib Cock	Set	9.0			
89	15mm Urinal Auto closing Flush Valve	Set	2.0			
90	CP 20mm Angle Valve	Set	23.0			
91	PVC FLOOR TRAP 11x7.5cm (4" X 2½")	Set	9.0			

Procument Item Details						
SL. No	Item Description	Unit	Quantity	Bidder's Rate (NPR)	Bidder's Rate (in words)	Total Amount (NPR)
92	110mm PVC Rain inlet with SS Jali	Nos.	2.0			
93	Supplying and fixing CPVC (Chlorinated Polyvinyl Chloride) pipe with PPR fittings/ specials (Tees, elbows, Unions etc) clamps(m.s plate with nut and bolt with hexagonal screws for clamp in ceiling,wall), nails, including jointing materials, installation of pipes and specials including making holes on walls or floor and repairing the same to its original finish,cleaning of the system, testing and ready for operation,. all complete set as per specification and instruction. 25 mm dia.	rm	40.0			
94	Supplying and fixing CPVC (Chlorinated Polyvinyl Chloride) pipe with PPR fittings/ specials (Tees, elbows, Unions etc) clamps(m.s plate with nut and bolt with hexagonal screws for clamp in ceiling,wall), nails, including jointing materials, installation of pipes and specials including making holes on walls or floor and repairing the same to its original finish,cleaning of the system, testing and ready for operation,. all complete set as per specification and instruction. 20 mm dia.	rm	80.0			
95	Supply and Installation of CPVC Ball Valves CTS sockets as per drawing and instruction 25 mm dia	no	6.0			
96	Supply and Installation of CPVC Ball Valves CTS sockets as per drawing and instruction 20 mm dia	no	4.0			
97	Waste pipe: 50 mm PVC Pipe 6 Kg/cm2	Rm	25.0			
98	Waste Pipe: 75 mm PVC Pipe 6 Kg/cm2	Rm	60.0			
99	Waste Pipe: 110 mm PVC Pipe 6 Kg/cm2	Rm	50.0			
100	CPVC Cowl/vent pipe specials supplying , fixing,Jointing, laying all complete 75 mm dia.	No.	3.0			
101	CPVC Cowl/vent pipe specials supplying , fixing,Jointing, laying all complete 110 mm dia.	No.	3.0			
102	Supplying and fitting CI Tank Cover 24" X 24" (24 kg) Square (Locking Type) all complete as per drawing, specification and instruction of the site engineer.	Pcs.	3.0			

Total of Procument Items	
Total Item Price	
VAT	
Grand Total	