

NEPAL ELECTRICITY AUTHORITY

(A Government of Nepal Undertaking)

Transmission Directorate



NEPAL-INDIA ELECTRICITY TRANSMISSION AND TRADE PROJECT

**Bidding Document
for
Construction of Store Building at Dhalkebar Substation
(Single Stage Bidding)
National Competitive Bidding (NCB)**

Issued on:

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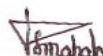
Invitation for Bids No.: NIETTP-32-W-NCB-4.12-SB

NCB No.: NIETTP-32-W-NCB-4.12-SB

May, 2018

Abbreviations

BD	Bidding Document
BDF	Bidding Forms
BDS	Bid Data Sheet
BOQ	Bill of Quantities
COF	Contract Forms
DP	Development Partners
ELI	Eligibility
EQC	Evaluation and Qualification Criteria
EXP	Experience
FIN	Financial
GCC	General Conditions of Contract
GoN	Government of Nepal
ICC	International Chamber of Commerce
IFB	Invitation for Bids
ITB	Instructions to Bidders
JV	Joint Venture
LIT	Litigation
NA (N/A)	Not Applicable
NCB	National Competitive Bidding
PAN	Permanent Account Number
PCC	Particular Conditions of Contract
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





Nepal Electricity Authority
Transmission Directorate
Nepal-India Electricity Transmission and Trade Project
Invitation for Bids (NCB)

First Date of Publication: May 27, 2018 (2075/02/13)

Name of Development Partner: International Development Association

Credit/Grant No: 4902-NP/H660-NP

1. Nepal Electricity Authority has received a credit/grant from Development Partner towards the cost of Nepal-India Electricity Transmission and Trade Project and intends to apply part of the funds to cover eligible payments under the following Contracts. Bidding is open for all Nepalese and Foreign Bidders.
2. NEA invites sealed bids from eligible bidders for the following works shown in the table below. Detailed description is given in the bidding documents.

Contract No.	Contract Name	Last date of bid document purchasing	Last date and time of bid submission	Bid opening date and time	Bid Security (NRs.)	Bid Validity Period	Bid Document fee (NRs.)
NIETTP-32-W-NCB-4.12-SB	Construction of Store Building at Dhalkebar Substation	June 25, 2018	June 26, 2018 12:00 PM	June 26, 2018 1:00 PM	1,20,000/-	90 days	3,000/-
NIETTP/W/N CB-4.3/ISQB-4.10/GH-4.11/SB	Construction of Staff Quarter, Store House & Guard House Building at Inaruwa Substation	June 25, 2018	June 26, 2018 12:00 PM	June 26, 2018 1:00 PM	7,75,000/-	90 days	5,000/-

3. Interested eligible bidders may obtain further information from and inspect the bidding documents at the address given below during business hours. Complete bidding documents are also posted on the NEA website <http://www.nea.org.np>.
4. A complete set of bidding documents may be purchased by interested bidders on the submission of a written application, along with the copy of Company/Firm Registration Certificate and upon payment of a non refundable fee as shown in above table deposited in the current Account No. 00051040015275 at Laxmi Bank Ltd, Hattisar, Kathmandu or in the form of draft drawn in favor of the "Hetauda-Dhalkebar-Duhabi 400kV-NEA". If so requested, the Bidding Documents can also be sent by post/courier upon payment of additional cost of NRs. 1,000 (in words Rupees One Thousand). However, the Employer will not be responsible for any delay or non- delivery of the documents so sent.
5. Bids must be submitted to the Project on or before as shown in the above table. **Documents received after this deadline shall not be accepted.**
6. Bids shall be opened in the presence of Bidders' representatives who choose to attend at time and date shown in the above table at the address of the office given below. Bids must be valid for a period given in the above table after bid opening i.e. September 24, 2018 and must be accompanied by bid security, amounting not less than the value given in the above table which shall be valid for 30 days beyond the bid validity period i.e. October 24, 2018. The bank guarantee shall be issued by commercial banks in Nepal.
7. If the last date of submission and opening falls on an official holiday then it shall be extended to the next working day. In such case the validity of bid security shall be considered from already specified last date for bid submission.
8. Bidders are advised to visit site and assess the actual site conditions before submitting their bid.
9. NEA reserves the right to accept or reject, wholly or partly any or all the bids without assigning any reason, whatsoever.

The address referred to above is:

The Project Manager

Nepal-India Electricity Transmission and Trade Project

Transmission Directorate

Nepal Electricity Authority,

Kharipati, Bhaktapur, Nepal

Telephone: +977 1 6616932,

Facsimile number: +977 1 6616660

Electronic mail address: mahators.nea@gmail.com



Handwritten signature

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PART 1 – Bidding Procedures





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Section 1 - 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 **specified in the Bid Data Sheet (BDS)**, the Employer, as **specified in the BDS**, issues these Bidding Documents for the procurement of the Works as specified in Section VI, Works Requirements. The name, identification, and number of lots (contracts) of this bidding are **specified 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 The Borrower or Recipient (hereinafter called “Borrower”) **specified in the BDS** has received or has applied for financing (hereinafter called “funds”) from the International Bank for Reconstruction and Development or the International Development Association (hereinafter called “the Bank”) in an amount **specified in the BDS**, toward the project named **in the BDS**. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which these Bidding Documents are issued.
 - 2.2 Payment by the Bank will be made only at the request of the Borrower and upon approval by the Bank, and will be subject, in all respects, to the terms and conditions of the Loan (or other financing) Agreement. The Loan (or other financing) Agreement prohibits a withdrawal from the Loan (or other financing) account for the purpose of any payment to persons or entities, or for any import of goods, if such payment or import, to the knowledge of the Bank, is prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. No party other than the Borrower shall derive any rights from the Loan (or other financing) Agreement or have any claim to the proceeds of the Loan (or other financing).
3. **Corrupt and Fraudulent**
 - 3.1 The Bank requires compliance with its policy in regard to



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corrupt and fraudulent practices as set forth in Section VI.

- 3.2 In further pursuance of this policy, Bidders shall permit and shall cause its agents (whether declared or not), sub-contractors, sub-consultants, service providers, or suppliers and any personnel thereof, to permit the Bank to inspect all accounts, records and other documents relating to any prequalification process, bid submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank.

4. Eligible Bidders

- 4.1 A Bidder may be a firm that is a private entity, or a 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 enter into such an agreement supported by a letter of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution. **Unless specified in the BDS**, there is no limit on the number of members in a JV.

- 4.2 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest for the purpose of this bidding process, if the Bidder:

- (a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or
- (b) receives or has received any direct or indirect subsidy from another Bidder; or
- (c) has the same legal representative as another Bidder; or
- (d) has a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or
- (e) participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which such Bidder is involved. However, this does not limit the inclusion of the same subcontractor in more than one bid; or
- (f) or any of its affiliates participated as a consultant in the



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- preparation of the design or technical specifications of the works that are the subject of the bid; or
- (g) or any of its affiliates has been hired (or is proposed to be hired) by the Employer or Borrower as Engineer for the Contract implementation;
 - (h) would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the BDS ITB 2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm;
 - (i) has a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the bidding documents or specifications of the contract, and/or the bid evaluation process of such contract; or (ii) would be involved in the implementation or supervision of such contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Bank throughout the procurement process and execution of the contract.
- 4.3 A Bidder may have the nationality of any country, subject to the restrictions pursuant to ITB 4.7. A Bidder shall be deemed to have the nationality of a country if the Bidder is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed sub-contractors or sub-consultants for any part of the Contract including related Services.
- 4.4 A Bidder that has been sanctioned by the Bank in accordance with the above ITB 3.1, including in accordance with the Bank's Guidelines on Preventing and Combating Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants ("Anti-Corruption Guidelines"), shall be ineligible to be prequalified for, bid for, or be awarded a Bank-financed contract or benefit from a Bank-financed contract, financially or otherwise, during such period of time as the Bank shall have determined. The list of debarred firms and individuals is available at the electronic address **specified in the BDS**.



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- 4.5 Bidders that are Government-owned enterprises or institutions in the Employer's Country may participate only if they can establish that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not dependent agencies of the Employer. To be eligible, a government-owned enterprise or institution shall establish to the Bank's satisfaction, through all relevant documents, including its Charter and other information the Bank may request, that it: (i) is a legal entity separate from the government (ii) does not currently receive substantial subsidies or budget support; (iii) operates like any commercial enterprise, and, inter alia, is not obliged to pass on its surplus to the government, can acquire rights and liabilities, borrow funds and be liable for repayment of its debts, and can be declared bankrupt; and (iv) is not bidding for a contract to be awarded by the department or agency of the government which under their applicable laws or regulations is the reporting or supervisory authority of the enterprise or has the ability to exercise influence or control over the enterprise or institution.
- 4.6 A Bidder shall not be under suspension from bidding by the Employer as the result of the operation of a Bid-Securing Declaration.
- 4.7 Firms and individuals may be ineligible if so indicated in Section V and (a) as a matter of law or official regulations, the Borrower's country prohibits commercial relations with that country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of goods or the contracting of works or services required; or (b) 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 or contracting of works or services from that country, or any payments to any country, person, or entity in that country.
- 4.8 A Bidder shall provide such evidence of eligibility satisfactory to the Employer, as the Employer shall reasonably request.

**5. Eligible
Materials,
Equipment and
Services**

- 5.1 The materials, equipment and services to be supplied under the Contract and financed by the Bank may have their origin in any country subject to the restrictions specified in Section V, Eligible Countries, and all expenditures under the Contract will not contravene such restrictions. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services.



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B. Contents of Bidding Document

6. Sections of Bidding Document

- 6.1 The Bidding Document consists of Parts 1, 2, and 3, which include all the Sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITB 8.

PART 1 Bidding Procedures

Section I - Instructions to Bidders (ITB)

Section II - Bid Data Sheet (BDS)

Section III - Evaluation and Qualification Criteria

Section IV - Bidding Forms

Section V - Eligible Countries

PART 2 Works Requirements

Section VI - Works Requirements

PART 3 Conditions of Contract and Contract Forms

Section VII - General Conditions of Contract (GCC)

Section VIII - Particular Conditions of Contract (PCC)

Section IX - Contract Forms

- 6.2 The Invitation for Bids issued by the Employer is not part of the Bidding Document.
- 6.3 Unless obtained directly from the Employer, the Employer is not responsible for the completeness of the Bidding Documents, responses to requests for clarification, the minutes of the pre-Bid meeting (if any), or Addenda to the Bidding Documents in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Employer shall prevail.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents and to furnish with its bid all information and documentation as is required by the Bidding Documents.



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7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting

- 7.1 A Bidder requiring any clarification of the Bidding Document shall contact the Employer in writing at the Employer's address **specified in the BDS** or raise its inquiries 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 prior to the deadline for submission of bids within a period **specified in the BDS**. The Employer shall forward copies of its response to all Bidders who have acquired the Bidding Documents in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. **If so specified in the BDS**, the Employer shall also promptly publish its response at the web page identified in the BDS. Should the clarification result in changes to the essential elements of the Bidding Documents, the Employer shall amend the Bidding Documents 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 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 **If so specified in the BDS**, the Bidder's designated representative is invited to attend a pre-bid meeting. 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 not later than one week before the meeting.
- 7.6 Minutes of the pre-bid meeting, if applicable, including the text of the questions asked by Bidders, 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 Documents in accordance with ITB 6.3. Any modification to the Bidding Documents that may become necessary as a result of the pre-bid meeting shall be



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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. 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 Documents by issuing addenda.
- 8.2 Any addendum issued shall be part of the Bidding Documents and shall be communicated in writing to all who have obtained the Bidding Document from the Employer in accordance with ITB 6.3. The Employer shall also promptly publish the addendum on the Employer's web page in accordance with ITB 7.1.
- 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.

C. Preparation of Bids

9. Cost of Bidding

- 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

10. Language of Bid

- 10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the language **specified in the BDS**. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language **specified in the BDS**, in which case, for purposes of interpretation of the Bid, such translation shall govern.

11. Documents Comprising the Bid

- 11.1 The Bid shall comprise the following:
- (a) Letter of Bid and Appendix to Bid, in accordance with ITB 12;
 - (b) completed Schedules, in accordance with ITB 12 and 14: **as specified in the BDS**;
 - (c) Bid Security or Bid Securing Declaration, in accordance with ITB 19.1;



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- (d) alternative bids, if permissible, in accordance with ITB 13;
- (e) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;
- (f) documentary evidence in accordance with ITB 17 establishing the Bidder's qualifications to perform the contract if its Bid is accepted;
- (g) Technical Proposal in accordance with ITB 16; and
- (h) any other document **required in the BDS**.

11.2 In addition to the requirements under ITB 11.1, bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all members and submitted with the bid, together with a copy of the proposed Agreement.

11.3 The Bidder shall furnish in the Letter of Bid information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.

12. Letter of Bid and Schedules

12.1 The Letter of Bid and Schedules shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.2. 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 Except as provided under 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



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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 (including any price reduction) quoted by the Bidder in the Letter of 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 IV. Bidding Forms. In case of admeasurement 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 Bid, in accordance with ITB 12.1, shall be the total price of the bid, excluding any discounts offered.

14.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Bid, in accordance with ITB 12.1.

14.5 **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 Schedule of Adjustment Data in Section IV- Bidding Forms and the Employer may require the Bidder to justify its proposed indices and weightings.

14.6 If so specified in ITB 1.1, bids are invited for individual lots (contracts) or for any combination of lots (packages). Bidders wishing to offer discounts 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. Discounts shall be submitted in accordance with ITB 14.4, provided the bids for all lots (contracts) are opened at



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the same time.

- 14.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 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. Currencies of Bid and Payment**
- 15.1 The currency(ies) of the bid and the currency(ies) of payments shall be as **specified in the BDS**.
- 15.2 Bidders may be required by the Employer to justify, to the Employer's satisfaction, their local and foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Adjustment Data in the Appendix to Bid are reasonable, in which case a detailed breakdown of the foreign currency requirements shall be provided by Bidders.
- 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 In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract, the Bidder shall provide the information requested in the corresponding information sheets included in Section IV, Bidding Forms.
- 17.2 If a margin of preference applies as specified in accordance with ITB 33.1, domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITB 33.1.
- 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 in accordance with ITB 22.1. A bid valid for a shorter period shall be rejected by the Employer as nonresponsive.



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- 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 forty-eight (48) 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, except as provided in ITB 18.3.
- 18.3 If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial bid validity, the Contract price shall be determined as follows:
- (a) In the case of fixed price contracts, the Contract price shall be the bid price adjusted by the factor **specified in the BDS**.
 - (b) In the case of adjustable price contracts, no adjustment shall be made.
 - (c) In any case, bid evaluation shall be based on the bid price without taking into consideration the applicable correction from those indicated above.

19. Bid Security

- 19.1 The Bidder shall furnish as part of its bid, either a Bid-Securing Declaration or a bid security **as specified in the BDS**, in original form and, in the case of a bid security, in the amount and currency **specified in the BDS**.
- 19.2 A Bid Securing Declaration shall use the form included in Section IV, Bidding Forms.
- 19.3 If a bid security is specified pursuant to ITB 19.1, the bid security shall be a demand guarantee in any of the following forms at the Bidder's option:
- (a) an unconditional guarantee issued by a bank or financial institution (such as an insurance, bonding or surety company);
 - (b) an irrevocable letter of credit;
 - (c) a cashier's or certified check; or
 - (d) another security **specified in the BDS**.

from a reputable source from an eligible country. If the unconditional guarantee is issued by a financial institution located outside the Employer's Country, the issuing financial institution shall have a correspondent financial institution located



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in the Employer's Country to make it enforceable. 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 substantially similar format approved by the Employer prior to bid submission. The bid security shall be valid for twenty-eight (28) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.

19.4 If a bid security or Bid Securing Declaration is specified pursuant to ITB 19.1, any bid not accompanied by a substantially responsive bid security or Bid-Securing Declaration shall be rejected by the Employer as non responsive.

19.5 If a bid security is specified pursuant to ITB 19.1, the bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's signing the Contract and furnishing the performance security pursuant to ITB 42.

19.6 The bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security.

19.7 The bid security may be forfeited or the Bid Securing Declaration executed:

(a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, or any extension thereto provided by the Bidder; or

(b) if the successful Bidder fails to:

(i) sign the Contract in accordance with ITB 41; or

(ii) furnish a performance security in accordance with ITB 42.

19.8 The bid security or the Bid Securing Declaration of a JV shall be in the name of the JV that submits the bid. If the JV has not been constituted into a legally-enforceable JV, at the time of bidding, the Bid Security or the Bid Securing Declaration shall be in the names of all future members as named in the letter of intent mentioned in ITB 4.1 and ITB 11.2.

19.9 If a bid security is **not required in the BDS**, and

(a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, or

(b) if the successful Bidder fails to: sign the Contract in



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accordance with ITB 41; or furnish a performance security in accordance with ITB 42;

the Borrower may, **if provided for in the BDS**, declare the Bidder ineligible to be awarded a contract by the Employer for a period of time **as stated in the BDS**.

20. Format and Signing of Bid

- 20.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 11 and clearly mark it "ORIGINAL". 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.
- 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 where entries or amendments have been made shall be signed or initialed by the person signing the bid.
- 20.3 In case the Bidder is a JV, the Bid shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.
- 20.4 Any 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 The Bidder shall enclose the original and all copies of the bid, including alternative bids, if permitted in accordance with ITB 13, in separate sealed envelopes, duly marking the envelopes as "ORIGINAL", "ALTERNATIVE" and "COPY." These envelopes containing the original and the copies shall then be enclosed in one single envelope.
- 21.2 The inner and outer envelopes shall:
- bear the name and address of the Bidder;
 - be addressed to the Employer as **provided in the BDS**



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pursuant to ITB 22.1;

- (c) bear the specific identification of this bidding process specified in accordance with BDS 1.1; and
- (d) bear a warning not to open before the time and date for bid opening.

21.3 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 **specified in the BDS**. When so **specified in the BDS**, bidders shall have the option of submitting their bids electronically. Bidders submitting bids electronically shall follow the electronic bid submission procedures **specified in the BDS**.

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, Substitution, and Modification of Bids

24.1 A Bidder may withdraw, substitute, or modify its bid 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 substitution or modification of the bid must accompany the respective written notice. All notices must be:

- (a) 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," "SUBSTITUTION," "MODIFICATION;" and
- (b) received by the Employer prior to the deadline prescribed for submission of bids, in accordance with ITB 22.

24.2 Bids requested to be withdrawn in accordance with ITB 24.1



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shall be returned unopened to the Bidders.

24.3 No bid may be withdrawn, substituted, 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 Letter of Bid or any extension thereof.

25. Bid Opening

25.1 Except in the cases specified in ITB 23 and 24, the Employer shall publicly open and read out in accordance with ITB 25.3 all bids received by the deadline, at the date, time and place **specified in the BDS**, in the presence of Bidders` designated representatives and anyone who choose to attend. Any specific electronic bid opening procedures required if electronic bidding is permitted in accordance with ITB 22.1, shall be **as specified in the BDS**.

25.2 First, 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 “SUBSTITUTION” shall be opened and read out and exchanged with the corresponding bid being substituted, and the substituted bid shall not be opened, but returned to the Bidder. No bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at bid opening. Envelopes marked “MODIFICATION” shall be opened and read out with the corresponding bid. No bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at bid opening. Only envelopes that are opened and read out at bid opening shall be considered further.

25.3 All other envelopes shall be opened one at a time, reading out: the name of the Bidder and whether there is a modification; the total Bid Price, per lot (contract) if applicable, including any discounts and alternative bids; the presence or absence of a bid security, or Bid Securing Declaration, if required; and any other details as the Employer may consider appropriate. Only discounts and alternative bids read out at bid opening shall be considered for evaluation. The Letter of Bid and the Bill of Quantities are to be initialed by representatives of the Employer attending bid opening in the manner **specified in the BDS**. The Employer shall neither discuss the merits of any bid nor reject any bid (except for late bids, in accordance with ITB 23.1).



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25.4 The Employer shall prepare a record of the bid opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; the Bid Price, per lot (contract) if applicable, including any discounts and alternative bids; and the presence or absence of a bid security, if one was required. 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. A copy of the record shall be distributed to all Bidders.

E. Evaluation and Comparison of Bids

26. Confidentiality

26.1 Information relating to the evaluation of bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with the bidding process until information on Contract award is communicated to all Bidders in accordance with ITB 40.

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 a Bidder wishes to contact the Employer on any matter related to the bidding process, it shall do so in writing.

27. Clarification of Bids

27.1 To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid given a reasonable time for a response. 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, including any voluntary increase or decrease in the prices or substance of the bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids, in accordance with ITB 31.

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.



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- 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. Determination of Responsiveness**
- 29.1 The Employer’s determination of a bid’s responsiveness is to be based on the contents of the bid itself, as defined in ITB11.
- 29.2 A substantially responsive bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,
- (a) if accepted, would:
 - (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or
 - (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer’s rights or the Bidder’s obligations under the proposed Contract; or
 - (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.
- 29.3 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.
- 29.4 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. Nonconformities, Errors, and Omissions**
- 30.1 Provided that a bid is substantially responsive, the Employer may waive any nonconformities in the bid.
- 30.2 Provided that a bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or



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documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

30.3 Provided that a bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price may 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 specified in Section III (Evaluation and Qualification Criteria).

31. Correction of Arithmetical Errors

31.1 Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:

- (a) only for unit price contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;
- (b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- (c) if there is a discrepancy between 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) and (b) above.

31.2 Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 31.1, shall result in the rejection of the Bid.

32. Conversion to Single Currency

32.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as **specified in the BDS**.

33. Margin of Preference

33.1 **Unless otherwise specified in the BDS**, a margin of preference for domestic bidders shall not apply.

34. Subcontractors

34.1 Unless otherwise stated in the BDS, the Employer does not intend to execute any specific elements of the Works by sub-contractors



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selected in advance by the Employer.

34.2 The Employer may permit subcontracting for certain specialized works as indicated in Section III. When subcontracting is permitted by the Employer, the specialized sub-contractor's experience shall be considered for evaluation. Section III describes the qualification criteria for sub-contractors.

34.3 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 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 bid, the Employer shall consider the following:

- (a) the bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities for admeasurement contracts or Schedule of Prices for lump sum contracts, but including Daywork items, where priced competitively;
- (b) price adjustment for correction of arithmetic errors in accordance with ITB 31.1;
- (c) price adjustment due to discounts offered in accordance with ITB 14.4;
- (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 32;
- (e) price adjustment for nonconformities in accordance with ITB 30.3;
- (f) the additional evaluation factors are specified 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), the methodology to determine the lowest evaluated price of the contract combinations, including any discounts offered in the Letter of Bid, is specified in Section III (Evaluation and Qualification Criteria).



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- 35.5 If the bid for an admeasurement contract, which results in the lowest Evaluated Bid Price, is seriously unbalanced, front loaded or substantially below updated estimates in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses 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 analyses, 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 to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.
- 36. Comparison of Bids** 36.1 The Employer shall compare the evaluated prices of all substantially responsive bids established in accordance with ITB 35.2 to determine the lowest evaluated bid.
- 37. Qualification of the Bidder** 37.1 The Employer shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated and substantially responsive bid meets the qualifying criteria specified in Section III (Evaluation and Qualification Criteria).
- 37.2 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.
- 37.3 An affirmative determination of qualification shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the bid, in which event the Employer shall proceed to the next lowest evaluated bid to make a similar determination of that Bidder's qualifications to perform satisfactorily.
- 38. Employer's Right to Accept Any Bid, and to Reject Any or All Bids** 38.1 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

- 39. Award Criteria** 39.1 Subject to ITB 37.1, the Employer shall award the Contract to the Bidder whose bid 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



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qualified to perform the Contract satisfactorily.

40. Notification of Award

40.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, via the Letter of Acceptance included in the Contract Forms, that its bid has been accepted. At the same time, the Employer shall also notify all other Bidders of the results of the bidding, and shall publish in UNDB online the results identifying the bid and lot (contract) numbers and the following information:

- (i) name of each Bidder who submitted a Bid;
- (ii) bid prices as read out at Bid Opening;
- (iii) name and evaluated prices of each Bid that was evaluated;
- (iv) name of bidders whose bids were rejected and the reasons for their rejection; and
- (v) name of the winning Bidder, and the Price it offered, as well as the duration and summary scope of the contract awarded.

40.2 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.

40.3 The Employer shall promptly respond in writing to any unsuccessful Bidder who, after notification of award in accordance with ITB 40.1, requests in writing the grounds on which its bid was not selected.



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- 41. Signing of Contract**
- 41.1 Promptly upon notification, the Employer shall send the successful Bidder the Contract Agreement.
- 41.2 Within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.
- 42. Performance Security**
- 42.1 Within twenty-eight (28) days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, subject to ITB 35.5, using for that purpose the Performance Security Form included in Section IX (Contract Forms), or another form acceptable to the Employer. If the performance security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a bond shall have a correspondent financial institution located in the Employer's Country.
- 42.2 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.
- 43. Adjudicator**
- 43.1 The Employer proposes the person **named in the BDS** to be appointed as Adjudicator under the Contract, at the hourly fee **specified in the BDS**, plus reimbursable expenses. If the Bidder disagrees with this proposal, the Bidder should so state in his Bid. If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator, the Employer will request the Appointing Authority designated in the Particular Conditions of Contract (PCC) pursuant to Clause 23.1 of the General Conditions of Contract (GCC), to appoint the Adjudicator.



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Section II - Bid Data Sheet (BDS)

A. Introduction

ITB 1.1	The number of the Invitation for Bids is : <i>NIETTP-35-W-NCB-4.12-SB</i> The Employer is: <i>Nepal Electricity Authority (NEA)</i>
ITB 1.1	The name of the bidding process is: <i>National Competitive Bidding (NCB)</i> The identification number of the bidding process is: <i>NIETTP-35-W-NCB-4.12-SB</i> The number and identification of lots comprising this bidding process is: <i>NA</i>
ITB 2.1	The Borrower is: <i>Government of Nepal (GoN)</i>
ITB 2.1	The name of the Project is: <i>Nepal India Electricity Transmission and Trade Project</i>
ITB 2.1	Loan or Financing Agreement amount: <i>NA</i>
ITB 4.1	Maximum number of members in the JV shall be: <i>2(Two)</i>
ITB 4.4	A list of debarred firms and individuals is available at the Bank's external website: www.worldbank.org/debarr

B. Bidding Documents

ITB 7.1	For <u>clarification purposes</u> only, the Employer's address is: The Project Manager Nepal-India Electricity Transmission and Trade Project Transmission Directorate Nepal Electricity Authority Kharipati, Bhaktapur, Nepal Telephone: +977 1 6616932 Facsimile number: +977 1 6616660 Electronic mail address: maharors.nea@gmail.com
ITB 7.1	Web page: http://www.nea.org.np
ITB 7.4	A Pre-Bid meeting <i>shall not</i> take place. A site visit conducted by the Employer <i>shall not be</i> organized.



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ITB 7.5	Time To request clarification: Should be received by the Employer no later than 10 days prior to the deadline of the bids submission date.
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C. Preparation of Bids

ITB 10.1	The language of the bid is: <i>English</i> All correspondence exchange shall be in <i>English</i> language.
ITB 11.1 (b)	The following schedules shall be submitted with the bid: Only the required Schedules in accordance with ITB 12 and ITB 14 are required to be submitted.
ITB 11.1 (h)	The Bidder shall submit with its bid the following additional documents: <ul style="list-style-type: none"> a) Notarized Company Legal Registration Certificate. b) Copy of Business Registration Certificate c) VAT and PAN Registration Certificates d) Tax Clearance Certificate or Submissions of Tax Returns up to 073/074 e) A written declaration made by the Bidder stating that the Bidder is not ineligible to participate in the Bid; has no conflict of interest in the proposed bid procurement proceedings and has not been punished for the profession or businesses related offence. f) Notarized Power of Attorney g) Notarized JV agreement if the bidder is not a single firm or single entity. h) Audited Balance-sheet of last three Fiscal years. i) Declaration of local agent if the bidder is a foreign bidder.
ITB 13.1	Alternative bids <i>shall not be</i> permitted.
ITB 13.2	Alternative times for completion <i>shall not be</i> permitted.
ITB 13.4	Alternative technical solutions shall be permitted for the following parts of the Works: <i>NA</i>
ITB 14.5	The prices quoted by the Bidder <i>shall not be</i> subject to adjustment during the performance of the Contract.
ITB 14.7	<i>Rewrite as follows:</i> 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.
ITB 15.1	The prices shall be quoted by the bidder in: Nepalese Rupees
ITB 18.1	The bid validity period shall be: 90 days.



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ITB 18.3 (a)	The bid price shall be adjusted by the following factor(s): NA
ITB 19.1	<p>A Bid Security <i>shall be</i> required. The amount and currency of the bid security shall be: NRs. 1,20,000.00, which shall be <i>valid for 30 days</i> beyond the bid validity period i.e October 24, 2018.</p> <p>The Bidder shall furnish a bid security from a commercial bank in Nepal. If bid security is issued by a foreign bank, it should be endorsed by a commercial bank in Nepal.</p>
ITB 19.3	The bid security shall be in the unconditional bank guarantee.
ITB 19.3 (d)	Other types of acceptable securities: None
ITB 19.9	<i>NA</i>
ITB 20.1	In addition to the original of the bid, the number of copies is: One
ITB 20.2	<p>The written confirmation of authorization to sign on behalf of the Bidder shall consist of:</p> <ul style="list-style-type: none"> (a) The name and description of the documentation required to demonstrate the authority of the signatory to sign the bid such as Power of Attorney; and (b) In case of Bids submitted by 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 authority to conduct all business for and of behalf of any and all the parties of JV during the bidding process and, in the event the JV is awarded the Contract, during the contract execution. (c) The Power of Attorney in (a) and (b) above shall be notarized. <p>All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.</p>



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D. Submission and Opening of Bids

ITB 22.1	Bidders <i>shall not</i> have the option of submitting their bids electronically.
ITB 22.1	<p>For bid submission only, the Employer's address is: The Project Manager Nepal-India Electricity Transmission and Trade Project Transmission Directorate Nepal Electricity Authority Kharipati, Bhaktapur, Nepal Telephone: +977 1 6616932 Facsimile number: +977 1 6616660 Electronic mail address: mahators.nea@gmail.com</p> <p>The deadline for bid submission is: Date: June 26, 2018 Time: 12:00 hrs local time (NST)</p>
ITB 25.1	<p>The bid opening shall take place at: The Project Office Nepal-India Electricity Transmission and Trade Project Transmission Directorate Nepal Electricity Authority Kharipati, Bhaktapur, Nepal Date: June 26, 2018 Time: 13:00 hrs local time (NST)</p>



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ITB 25.3	<i>The Letter of Bid and Priced Bill of Quantities shall be initialed by representatives of the Employer conducting Bid opening.</i>
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E. Evaluation and Comparison of Bids

ITB 32.1	Not applicable.
ITB 33.1	A margin of preference <i>shall not</i> apply.
ITB 34.1	<i>Not Applicable</i>
ITB 34.3	<i>Not Applicable</i>
ITB 38.2	<p><i>Add a new Sub- Clause 38.2</i>, Bids shall be rejected as being non-responsive if</p> <ol style="list-style-type: none"> a. The bidder has not purchased and returned the original document issued by NEA. b. The Bid Document is issued in the name of one firm and Bid proposal submitted by another firm. The bid has been purchased in the name of single firm and submitted in the name of Joint Venture and vice versa. c. The Bid does not contain wax sealed bid proposal. d. The Bid is not signed and stamped by the bidder or their authorized representative. e. It is proved that bidders have submitted the bids by making such arrangements that limits the participation of other bidders or influences the bid price in any manner. f. The Bid is received by NEA after the deadline for submission of Bids. g. All the information required by the bid document is not mentioned or falsely quoted. h. The documents and guarantee/bank voucher as required by the bid are not attached with the bid proposal. i. The bid is conditional. j. Any conditions mentioned in Invitation for Bids are not fulfilled. k. Proposed construction schedule showing completion dates more than NEA's requirement. l. Qualification criteria as per bidding data Sheet, ITB Clause 4.0 "Eligible



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	<p>Bidders” are not met.</p> <p>m. The description provided by the bidders pertaining to the qualification is found to be false or is substantially incomplete.</p> <p>n. If the required documents are not submitted authenticated English version. <i>However the documents in Nepali language issued from the concerned authority of Nepal will also be accepted.</i></p> <p>o. The bidder does not offer all the items and quantity specified in Price Schedule.</p> <p>p. The Bid Security (Bid Bond) is not enclosed pursuant to ITB Clause 19 or is not acceptable in form and / or substance.</p> <p>q. The bid has price escalation clause.</p> <p>r. The Bid Security submitted is not specifically mentioned to be applicable to the offer of the Bidder.</p> <p>s. The Bid Bond submitted by someone other than the Bidder does not clearly mention that the Bond is submitted on behalf of the Bidder in the Bid Bond itself.</p> <p>t. The bid price of lowest substantially responsive bidder is substantially higher than the estimated price.</p> <p>u. The Bid Security is not in the name of JV in case of JV.</p> <p>v. The Bidder fails to provide satisfactory reason to clarification requested by the Employer regarding the proposal which is considered unbalanced, front loaded or substantially below updated estimate as per clause ITB 35.5.</p> <p>w. Qualification Criteria as per Section III are not met.</p> <p>x. Section IV – Bidding Forms are not properly filled.</p> <p>y. The clarification submitted by the Bidder in response to the clarification asked by the Employer that is not in response to the request by the Employer shall not be considered. No change in prices or substance of the bid shall be sought, offered, or permitted. If the Bidder does not provide clarifications of its bid by the date and time set in the Employer’s request for clarification.</p> <p>z. The Bidder request for the modification or withdrawal of the Bid after the deadline of submission of Bids.</p> <p>aa. The lowest evaluated bid does not accept the correction of errors.</p>
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	<p>bb. The number of JV consortium is more than two. If percentage of liability among JV partners are not clearly mentioned. If the copy of the attached JV Agreement is not notarized.</p> <p>cc. The notarized Power of Attorney to sign the bid on behalf of Bidder and JV (if any) is not attached.</p> <p>dd. The Bid fails to satisfy that Bid is fully cognizant of Scope of details of the Work involved.</p> <p>ee. The Bid does not contain technical information and documents for major items required by Specifications for materials on which the bidder is offering.</p> <p>ff. The bid price of the Lowest substantially responsive bidder is substantially higher than the estimated price.</p>
--	--

F. Award of Contract

ITB 43.1	<p>The Adjudicator proposed by the Employer is <i>None</i></p> <p>If required, the adjudicator will be appointed by the Nepal Council of Arbitration in accordance to the Rules of Adjudication (section X).</p>
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Section III - Evaluation and Qualification Criteria

This section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders if the bidding was not preceded by a prequalification exercise and post qualification is applied. In accordance with ITB 35 and ITB 37, 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).

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1. Margin of Preference

(Not Applicable)

If a margin of preference shall apply under ITB 33.1, the procedure will be as follows as:

A margin of preference of 7.5% (seven and one-half percent) shall be granted to domestic contractors, in accordance with, and subject to, the following provisions:

- (a) Contractors applying for such preference shall provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Borrower and accepted by the Bank, a particular contractor or group of contractors qualifies for a domestic preference. The bidding documents shall clearly indicate the preference and the method that will be followed in the evaluation and comparison of bids to give effect to such preference.
- (b) After bids have been received and reviewed by the Borrower, responsive bids shall be classified into the following groups:
 - (i) Group A: bids offered by domestic contractors eligible for the preference.
 - (ii) Group B: bids offered by other contractors.

All evaluated bids in each group shall, as a first evaluation step, be compared to determine the lowest bid, and the lowest evaluated bids in each group shall be further compared with each other. If, as a result of this comparison, a bid from Group A is the lowest, it shall be selected for the award. If a bid from Group B is the lowest, as a second evaluation step, all bids from Group B shall then be further compared with the lowest evaluated bid from Group A. For the purpose of this further comparison only, an amount equal to 7.5% (seven and one-half percent) of the respective bid price corrected for arithmetical errors, including unconditional discounts and excluding provisional sums and the cost of day works, if any, shall be added to the evaluated price offered in each bid from Group B. If the bid from Group A is the lowest, it shall be selected for award. If not, the lowest evaluated bid from Group B based on the first evaluation step shall be selected

2. Evaluation

In addition to the criteria listed in ITB 35.2 (a) – (e) the following criteria shall apply:

2.1 Adequacy of Technical Proposal (Not Applicable)



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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 VII (Works Requirements).

2.2 Multiple Contracts (Not Applicable)

Pursuant to Sub-Clause 35.4 of the Instructions to Bidders, if Works are grouped in multiple contracts, evaluation will be as follows:

Award Criteria for Multiple Contracts [ITB 35.4]:

Lots

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

Packages

Bidders have the option to Bid for any one or more packages and for any one or more lots within a package. Bids will be evaluated package-wise, taking into account discounts offered, if any, for combined packages and/or lots within a package. The contract(s) will be awarded to the Bidder or Bidders offering the lowest evaluated cost to the Employer for combined packages, subject to the selected Bidder(s) meeting the required qualification criteria for combination of packages and or lots as the case may be.

Qualification Criteria for Multiple Contracts:

Section III describes criteria for qualification for each lot (contract) for multiple lots (contracts). The criteria for qualification is aggregate minimum requirement for respective lots as specified under items 3.1, 3.2, 4.2(a) and 4.2(b). However, with respect to the specific experience under item 4.2 (a) of Section III, the Employer will select any one or more of the options as identified below:

N is the minimum number of contracts

V is the minimum value of a single contract

(a) For one Contract:

Option 1:

(i) N contracts, each of minimum value V;

Or



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Option 2:

- (i) N contracts, each of minimum value V; or
- (ii) Less than or equal to N contracts, each of minimum value V, but with total value of all contracts equal or more than $N \times V$.

(b) For multiple Contracts**Option 1:**

- (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:

Lot 1: N1 contracts, each of minimum value V1;

Lot 2: N2 contracts, each of minimum value V2;

Lot 3: N3 contracts, each of minimum value V3;

----etc. or

Option 2:

- (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:

Lot 1: N1 contracts, each of minimum value V1;

Lot 2: N2 contracts, each of minimum value V2;

Lot 3: N3 contracts, each of minimum value V3;

----etc,

or

- (ii) Lot 1: N1 contracts, each of minimum value V1; or number of contracts less than or equal to N1, each of minimum value V1, but with total value of all contracts equal or more than $N1 \times V1$.

Lot 2: N2 contracts, each of minimum value V2; or number of contracts less than or equal to N2, each of minimum value V2, but with total value of all contracts equal or more than $N2 \times V2$.

Lot 3: N3 contracts, each of minimum value V3; or number of contracts less than or equal to N3, each of minimum value V3, but with total value of all contracts equal or more than $N3 \times V3$.

----etc.

Or



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Option 3:

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

Lot 1: N1 contracts, each of minimum value V1;

Lot 2: N2 contracts, each of minimum value V2;

Lot 3: N3 contracts, each of minimum value V3;

----etc, **or**

(ii) Lot 1: N1 contracts, each of minimum value V1; or number of contracts less than or equal to N1, each of minimum value V1, but with total value of all contracts equal or more than $N1 \times V1$.

Lot 2: N2 contracts, each of minimum value V2; or number of contracts less than or equal to N2, each of minimum value V2, but with total value of all contracts equal or more than $N2 \times V2$.

Lot 3: N3 contracts, each of minimum value V3; or number of contracts less than or equal to N3, each of minimum value V3, but with total value of all contracts equal or more than $N3 \times V3$.

----etc, or

(iii) Subject to compliance as per (ii) above with respect to minimum value of single contract for each lot, 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 $N1 \times V1 + N2 \times V2 + N3 \times V3$ +---

2.3 Alternative Completion Times (Not Applicable)

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

2.4 Technical Alternatives (Not Applicable)

Technical alternatives, if permitted under ITB 13.4, will be evaluated as follows:

2.5 Specialized Subcontractors (Not Applicable)

Only the specific experience of sub-contractors for specialized works permitted by the Employer will be considered. The general experience and financial resources of the specialized sub-contractors shall not be added to those of the Bidder for purposes of qualification of the Bidder.

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



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3. Qualification

Eligibility and Qualification Criteria			Compliance Requirements				Documentation
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
1. Eligibility							
1.1	Nationality	Nationality in accordance with ITB 4.3	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Forms ELI – 1.1 and 1.2, with attachments
1.2	Conflict of Interest	No conflicts of interest in accordance with ITB 4.2	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Letter of Bid
1.3	Bank Eligibility	Not having been declared ineligible by the Bank, as described in ITB 4.4, 4.5, 4.6 and 4.7	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Letter of Bid
1.4	Government Owned Entity of the Borrower country	Meets conditions of ITB 4.5	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Forms ELI – 1.1 and 1.2, with attachments
1.5	United Nations resolution or Borrower's country law	Not having been excluded as a result of prohibition in the Borrower's country laws or official regulations against commercial relations with the Bidder's country, or by an act of compliance with UN Security Council resolution, both in accordance with ITB 4.7 and Section V.	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Letter of Bid



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2. Historical Contract Non-Performance							
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
2.1	History of Non-Performing Contracts	Non-performance of a contract did not occur as a result of contractor default since FY 069/70	Must meet requirement ¹	Must meet requirements	Must meet requirement	N/A	Form CON-2
2.2	Suspension Based on Execution of Bid Securing Declaration by the Employer or withdrawal of the Bid within Bid validity	Not under suspension based on execution of a Bid Securing Declaration pursuant to ITB 4.6 or withdrawal of the Bid pursuant ITB 19.9.	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Bid Submission Form
2.3	Pending Litigation	Bidder's financial position and prospective long term profitability sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Bidder.	Must meet requirement	N/A	Must meet requirement	N/A	Form CON – 2
2.4	Litigation History	No consistent history of court/arbitral award decisions against the Bidder ¹ since FY 069/70	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Form C)N-2

¹The Bidder shall provide accurate information on the letter of Bid about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the last five years. A consistent history of court/arbitral awards against the Bidder or any member of a joint venture may result in disqualifying the Bidder.



Handwritten signature or mark.

3. Financial Situation and Performance							
3.1	Financial Capabilities	(i) The Bidder shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as NRs. 2.5 million for the subject contract(s) net of the Bidders other commitments (ii) The Bidders shall also demonstrate, to the satisfaction of the Employer, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments. (iii) The audited balance sheets or, if not required by the laws of the Bidder's country, other financial statements acceptable to the Employer, for the last three years shall be submitted and must demonstrate the current soundness of the Bidder's financial position and indicate its prospective long-term profitability.	Must meet requirement	Must meet Requirement	N/A	N/A	Form FIN – 3.1, with attachments
			Must meet requirement	Must meet requirement	N/A	N/A	
			Must meet requirement	N/A	Must meet requirement	N/A	



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3.2	Average Annual Construction Turnover	Minimum average annual construction turnover of NRs. 12 million , calculated as total certified payments received for contracts in progress and/or completed within the last three years, divided by years	Must meet requirement	Must meet requirement	Must meet 10% of the requirement	Must meet 51% of the requirement	Form FIN – 3.2
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4. Experience							
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
4.1 (a)	General Construction Experience	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last 5 (five) years, prior to the applications submission deadline.	Must meet requirement	N/A	Must meet requirement	N/A	Form EXP – 4.1
4.2 (a)	Specific Construction & Contract Management Experience	Participation as Prime Contractor or Subcontractor, in at least one (1) Contract of civil construction works within last five (five) years, with a value of at least NRs. 4 million without VAT or number of civil construction contracts whose aggregate size is not less than NRs.4 million that have been successfully completed within last five (5) years.	Must meet requirement	Must meet requirement	Must meet at least 20% of the requirement	Must meet at least 60% of the requirement	Form EXP 4.2(a)

End- user certificates for all the relevant projects undertaken by the bidder and all the partners in JVA shall be submitted along the bid to substantiate the work experience. The end-user's certificate shall be on the end-user's original letter head and shall not be earlier than 5 years with valid address for correspondence and signed by or on behalf of the end user.



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Personnel

The Bidder must demonstrate that it will have the personnel for the key positions that meet the following requirements:

No.	Position	Total Work Similar Experience (years)	In Similar Works Experience (years)
1	Project Manager	5	4
2	Civil Engineer	4	3
3	Civil Overseer	3	2

The Bidder shall provide details of the proposed personnel and their experience records in the relevant Forms included in Section IV, Bidding Forms.

6. Equipment

The Bidder must demonstrate that it will have access to the key Contractor's equipment listed hereafter:

No.	Equipment Type and Characteristics	Minimum Number required
1	Concrete Mixture	1
2	Vibrator	2

The Bidder shall provide further details of proposed items of equipment using the relevant Form in Section IV.

17. Construction Schedule

The Bidder shall propose the construction schedule for not more than **6 months** from the Contract effective date. Construction schedule for more than 6 months shall cause the rejection of Bid.



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Section IV - Bidding Forms

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Letter of Bid

The Bidder must prepare the Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and address.

Date:

NCB No.:

Invitation for Bid No.:

To:

**The Project Chief
Nepal-India Electricity Transmission and Trade Project
Transmission Directorate
Nepal Electricity Authority
Kharipati, Bhaktapur, Nepal**

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB 8);
- (b) We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
- (c) We have not been suspended nor declared ineligible by the Employer based on execution of a Bid Securing Declaration in the Employer's country in accordance with ITB 4.6
- (d) We offer to execute in conformity with the Bidding Documents the following Works:
.....
.....
- (e) The total price of our Bid, excluding any discounts offered in item (f) below is:
.....
.....
- (f) The discounts offered and the methodology for their application are:
.....
.....
- (g) Our bid shall be valid for a period of [*specify the number of calendar days*] 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;
- (h) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;



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- (i) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB 4.2(e), other than alternative bids submitted in accordance with ITB 13;
- (j) We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by a member of the World Bank Group or a debarment imposed by the World Bank Group in accordance with the Agreement for Mutual Enforcement of Debarment Decisions between the World Bank and other development banks. Further, we are not ineligible under the Employer's country laws or official regulations or pursuant to a decision of the United Nations Security Council;
- (k) We are not a government owned entity/ We are a government owned entity but meet the requirements of ITB 4.5;²
- (l) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract: ***[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]***

Name of Recipient	Address	Reason	Amount
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

(If none has been paid or is to be paid, indicate "none.")

- (m) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (n) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.
- (o) We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any type of fraud and corruption.

Name of the Bidder*

Name of the person duly authorized to sign the Bid on behalf of the Bidder**

Title of the person signing the Bid

Signature of the person named above

Date signed

*: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder
 **: Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid Schedules.

²Bidder to use as appropriate



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2. Schedule of Payment Currencies (Not Applicable)

Forinsert name of Section of the Works

Separate tables may be required if the various sections of the Works (or of the Bill of Quantities) will have substantially different foreign and local currency requirements. The Employer should insert the names of each Section of the Works.

	A	B	C	D
Name of Payment Currency	Amount of Currency	Rate of Exchange to Local Currency	Local Currency Equivalent $C = A \times B$	Percentage of Total Bid Price (TBP) $\frac{100 \times C}{TBP}$
Local currency _____		1.00		
Foreign Currency #1 _____	NA	NA	NA	NA
Foreign Currency #2 _____	NA	NA	NA	NA
Foreign Currency #3 _____	NA	NA	NA	NA
Total Bid Price				100.00
Provisional Sums Expressed in Local Currency		1.00		
TOTAL BID PRICE (Including provisional sum)				

Schedule(s) of Adjustment Data (Not Applicable)

Table A - Local Currency

Index Code	Index Description	Source of Index	Base Value and Date	Bidder's Local Currency Amount	Bidder's Proposed Weighting
	Nonadjustable	—	—	—	A: _____* B: _____* C: _____* D: _____* E: _____*
Total					1.00

[* To be entered by the Employer. Whereas “A” should a fixed percentage, B, C, D and E should specify a range of values and the Bidder will be required to specify a value within the range such that the total weighting = 1.00]

Table B - Foreign Currency

Name of Currency: _____

If the Bidder wishes to quote in more than one foreign currency, this table should be repeated for each foreign currency.

Index Code	Index Description	Source of Index	Base Value and Date	Bidder's Currency in Type/Amount	Equivalent in FC1	Bidder's Proposed Weighting
	Nonadjustable	—	—	—		A: _____* B: _____* C: _____* D: _____* E: _____*
Total						1.00

[* To be entered by the Employer. Whereas “A” should a fixed percentage, B, C, D and E should specify a range of values and the Bidder will be required to specify a value within the range such that the total weighting = 1.00]



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Form of Bid Security (Bank Guarantee)

[On the letterhead of the “A” class Commercial Bank]

Beneficiary: *[Insert name and address of the Employer]*

Invitation for Bids No: *[Insert reference number for the Invitation for Bids]*

Date:*[Insert date of issue]*

BID GUARANTEE No.:*[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *[insert name of the Bidder, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof]* (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its bid (hereinafter called "the Bid") for the execution of *[insert description of contract]* under Invitation for Bids No. *[insert number]* ("the IFB").

Furthermore, we understand that, according to the Beneficiary's conditions, bids must be supported by a bid 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 letters]* (*insert amount in numbers*) upon receipt by us of the Beneficiary's complying supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating either that the Applicant:

- (a) has withdrawn its Bid during the period of bid validity specified by the Applicant in the Letter of Bid, or any extension thereto provided by the Applicant; or
- (b) having been notified of the acceptance of its Bid by the Beneficiary during the period of bid validity, (i) fails to execute the Contract Agreement or (ii) fails to furnish the performance security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, upon our receipt of copies of the contract agreement signed by the Applicant and the performance security issued to the Beneficiary upon the instruction of the Applicant; and (b) if the Applicant is not the successful Bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the bidding process; or (ii) twenty-eight days after the Validity Period, which date shall be established by presentation to us of copies of the Letter of Bid and any extension(s) thereto, accompanied by the bidding document; or (c) three years after the date of issue of this guarantee.

Consequently, any demand for payment under this guarantee 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.

[signature(s)]

Note: *All italicized text is for use in preparing this form and shall be deleted from the final product.*



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Form of Bid Security (Bid Bond)

(Not Applicable)

[The Surety shall fill in this Bid Bond Form in accordance with the instructions indicated.]

BOND NO. _____

BY THIS BOND [*name of Bidder*] as Principal (hereinafter called “the Principal”), and [*name, legal title, and address of surety*], authorized to transact business in [*name of country of Purchaser*], as Surety (hereinafter called “the Surety”), are held and firmly bound unto [*name of Purchaser*] as Obligee (hereinafter called “the Purchaser”) in the sum of [*amount of Bond*]³[*amount in words*], for the payment of which sum, well and truly to be made, we, the said Principal and Surety, bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has submitted a written Bid to the Purchaser dated the ___ day of _____, 20___, for the supply of [*name of Contract*] (hereinafter called the “Bid”).

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal:

- (a) withdraws its Bid during the period of bid validity specified in the Form of Bid; or
- (b) having been notified of the acceptance of its Bid by the Purchaser during the period of Bid validity; (i) fails or refuses to execute the Contract Form; or (ii) fails or refuses to furnish the Performance Security, if required, in accordance with the Instructions to Bidders.

then the Surety undertakes to immediately pay to the Purchaser up to the above amount upon receipt of the Purchaser’s first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

The Surety hereby agrees that its obligation will remain in full force and effect up to and including the date 28 days after the date of expiration of the Bid validity as stated in the Invitation to Bid or extended by the Purchaser at any time prior to this date, notice of which extension(s) to the Surety being hereby waived.

IN TESTIMONY WHEREOF, the Principal and the Surety have caused these presents to be executed in their respective names this ___ day of _____ 20___.

Principal: _____ Surety: _____
Corporate Seal (where appropriate)

(Signature)
(Printed name and title)

(Signature)
(Printed name and title)

³ The amount of the Bond shall be denominated in the currency of the Purchaser’s country or the equivalent amount in a freely convertible currency.



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Form of Bid-Securing Declaration

(Not Applicable)

Date: *[insert date (as day, month and year)]*

Bid No.: *[insert number of bidding process]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[insert complete name of Employer]*

We, the undersigned, declare that:

We understand that, according to your conditions, bids must be supported by a Bid-Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding in any contract with the entity that invited Bids for the period of time of *[insert number of months or years]* starting on *[insert date]*, if we are in breach of our obligation(s) under the bid conditions, because we:

- (a) have withdrawn our Bid during the period of bid validity specified in the Letter of Bid; or
- (b) having been notified of the acceptance of our Bid by the Employer during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the ITB.

We understand this Bid-Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Name of the Bidder* _____ ***[insert complete name of person signing the Bid]***

Name of the person duly authorized to sign the Bid on behalf of the Bidder** ***[insert complete name of person duly authorized to sign the Bid]***

Title of the person signing the Bid ***[insert complete title of the person signing the Bid]***

Signature of the person named above _____ ***[insert signature of person whose name and capacity are shown above]***

Date signed *[insert date of signing]* day of *[insert month]*, *[insert year]*

*: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

** : Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid [Note: In case of a Joint Venture, the Bid-Securing Declaration must be in the name of all members to the Joint Venture that submits the bid.]



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Technical Proposal

Technical Proposal Forms

Personnel

Equipment

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Others



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Forms for 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 III (Evaluation and Qualification Criteria). The data on their experience should be supplied using the Form below for each candidate.

1.	Title of position
	Name
2.	Title of position
	Name
3.	Title of position
	Name
4.	Title of position
	Name
5.	Title of position
	Name
6.	Title of position
	Name
etc.	Title of position
	Name



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Form PER – 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below. Fields with asterisk (*) shall be used for evaluation.

Position*		
Personnel 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 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*



Forms for 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 III (Evaluation and Qualification Criteria). A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder. The Bidder shall provide all the information requested below, to the extent possible. Fields with asterisk (*) shall be used for evaluation.

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 <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> 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	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	



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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



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Form ELI -1.1: Bidder Information Form

Date: _____
 NCB No. and title: _____
 Page _____ of _____ pages

Bidder's name
In case of Joint Venture (JV), name of each member:
Bidder's actual or intended country of registration: <i>[indicate country of Constitution]</i>
Bidder's actual or intended year of incorporation:
Bidder's legal address [in country of registration]:
Bidder's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
1. Attached are copies of original documents of <input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITB 4.3. <input type="checkbox"/> In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1. <input type="checkbox"/> In case of Government-owned enterprise or institution, in accordance with ITB 4.5 documents establishing: <ul style="list-style-type: none"> • Legal and financial autonomy • Operation under commercial law • Establishing that the Bidder is not dependent agency of the Employer
2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.



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Form ELI -1.2: Information Form for JV Bidders

(to be completed for each member of Joint Venture)

Date: _____

NCB No. and title: _____

Page _____ of _____ pages

Bidder's Joint Venture name:
JV member's name:
JV member's country of registration:
JV member's year of constitution:
JV member's legal address in country of constitution:
<p>JV member's authorized representative information</p> <p>Name: _____</p> <p>Address: _____</p> <p>Telephone/Fax numbers: _____</p> <p>E-mail address: _____</p>
<p>1. Attached are copies of original documents of</p> <p><input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITB 4.3.</p> <p><input type="checkbox"/> In case of a Government-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and absence of dependent status, in accordance with ITB 4.5.</p> <p>2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.</p>



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Form CON – 2: Historical Contract Non-Performance, Pending Litigation and Litigation History

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

NCB No. and title: _____

Page _____ of _____ pages

Year	Non-performed portion of contract	Contract Identification	Total Contract Amount (NRs.)
Non-Performed Contracts in accordance with Section III, Evaluation Criteria and Qualifications			
<input type="checkbox"/> Contract non-performance did not occur since <i>[insert year]</i> specified in Section III, Evaluation Criteria and Qualifications, Sub-Factor 2.1.			
<input type="checkbox"/> Contract(s) not performed since <i>[insert year]</i> specified in Section III, Evaluation Criteria and Qualifications, requirement 2.1			
		Contract Identification: Name of Employer: Address of Employer: Reason(s) for non performance:	
Pending Litigation, in accordance with Section III, Evaluation Criteria and Qualifications			
<input type="checkbox"/> No pending litigation in accordance with Section III, Evaluation Criteria and Qualifications, Sub-Factor 2.3.			
<input type="checkbox"/> Pending litigation in accordance with Section III, Evaluation Criteria and Qualifications, Sub-Factor 2.3 as indicated below.			



Form CCC: 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.

Name of contract	Employer, contact address/tel/fax	Value of outstanding work (current NRs. equivalent)	Estimated completion date	Average monthly invoicing over last six months (NRs./month)
1.				
2.				
3.				
4.				
5.				
etc.				



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Form FIN – 3.1: Financial Situation and Performance

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

NCB No. and title: _____

Page _____ of _____ pages

1. Financial data

Type of Financial information in (currency)	Historic information for previous _____ years, _____ (amount in currency)		
	Year 1 (FY 2071/072)	Year 2 (FY 2072/073)	Year 3 (FY 2073/074)
Total Assets (TA)			
Total Liabilities (TL)			
Total Equity/Net Worth (NW)			
Current Assets (CA)			
Current Liabilities (CL)			
Working Capital (WC)			
Total Revenue (TR)			
Profits Before Taxes (PBT)			
Cash Flow from Operating Activities			

2. Sources of Finance

Specify sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.



No.	Source of finance	Amount (NRs.)
1		
2		
3		

2. Financial documents

The Bidder and its parties shall provide copies of financial statements for *three* years pursuant Section III, Evaluation and Qualifications Criteria, Sub-factor 3.2. The financial statements shall:

- (a) reflect the financial situation of the Bidder or in case of JV member , and not an affiliated entity (such as parent company or group member).
 - (b) be independently audited or certified in accordance with local legislation.
 - (c) be complete, including all notes to the financial statements.
 - (d) correspond to accounting periods already completed and audited.
- Attached are copies of financial statements⁴ for the three years required above; and complying with the requirements

⁴ If the most recent set of financial statements is for a period earlier than 12 months from the date of bid, the reason for this should be justified.



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Form FIN - 3.2: Average Annual Construction Turnover

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

NCB No. and title: _____

Page _____ of _____ pages

Annual turnover data (construction only)	
Year <i>[indicate year]</i>	Amount Currency (NRs.) <i>[insert amount and indicate currency]</i>
2071/072	
2072/073	
2073/074	
Average Annual Construction Turnover *	

* See Section III, Evaluation and Qualification Criteria, Sub-Factor 3.2.



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Form FIN3.3: 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 specified in Section III (Evaluation and Qualification Criteria)

Source of financing	Amount (NRs.)
1.	
2.	
3.	



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Form EXP - 4.1: General Construction Experience

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

NCB No. and title: _____

Page _____ of _____ pages

Starting Year	Ending Year	Contract Identification	Role of Bidder
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of Employer: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of Employer: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of Employer: _____ Address: _____	



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Form EXP - 4.2(a): Specific Construction and Contract Management Experience

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

NCB No. and title: _____

Page _____ of _____ pages

Similar Contract No.	Information			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor <input type="checkbox"/>	Member in JV <input type="checkbox"/>	Management Contractor <input type="checkbox"/>	Sub-contractor <input type="checkbox"/>
Total Contract Amount				NRs.
If member in a JV or sub-contractor, specify participation in total Contract amount% of total	Amount (NRs.).....		
Employer's Name:				
Address:				
Telephone/fax number				
E-mail:				



Form EXP - 4.2(a) (cont.)
Specific Construction and Contract Management Experience (cont.)

Similar Contract No.	Information
Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:	
1. Amount	
2. Physical size of required works items	
3. Complexity	
4. Methods/Technology	
5. Construction rate for key activities	
6. Other Characteristics	



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Form EXP - 4.2(b): Construction Experience in Key Activities

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

Sub-contractor's Name (as per ITB 34.2 and 34.3): _____

NCB No. and title: _____

Page _____ of _____ pages

Sub-contractor's Name (as per ITB 34.2 and 34.3): _____

All Sub-contractors for key activities must complete the information in this form as per ITB 34.2 and 34.3 and Section III, Qualification Criteria and Requirements, Sub-Factor 4.2.

1. Key Activity No One: _____

		Information			
Contract Identification					
Award date					
Completion date					
Role in Contract	Prime Contractor <input type="checkbox"/>	Member in JV <input type="checkbox"/>	Management Contractor <input type="checkbox"/>	Sub-contractor <input type="checkbox"/>	
Total Contract Amount				NRs.	
Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year	Total quantity in the contract (i)	Percentage participation (ii)		Actual Quantity Performed (i) x (ii)	
Year 1					
Year 2					
Year 3					
Year 4					
Employer's Name: Address: Telephone/fax number E-mail:					



Section V. Eligible Countries

1. *In accordance with Para 1.8 of the Guidelines: Procurement under IBRD Loans and IDA Credits, dated May 2004, the Bank permits firms and individuals from all countries to offer goods, works and services for Bank-financed projects. As an exception, firms of a Country or goods manufactured in a Country may be excluded if:*

Para 1.8 (a) (i): as a matter of law or official regulation, the Borrower's Country prohibits commercial relations with that Country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of the Goods or Works required, or

Para 1.8 (a) (ii): 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 that Country or any payments to persons or entities in that Country.

2. For the information of borrowers and bidders, at the present time firms, goods and services from the following countries are excluded from this bidding:

- (a) With reference to paragraph 1.8 (a) (i) of the Guidelines:
NONE
- (c) With reference to paragraph 1.8 (a) (ii) of the Guidelines:



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PART 2 – Works Requirements



Section VI - Works Requirements

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SPECIFICATIONS

CIVIL, ARCHITECTURAL, WATER SUPPLY AND SANITATION AND ELECTIFICATION WORKS FOR STORE HOUSE BUILDING

SPECIFICATION FOR CIVIL, ARCHITECTURAL WORK

1. GENERAL

The development of new hydro power generation projects has been given a new priority by Government of Nepal (GoN) and by the national utility, the Nepal Electricity Authority (NEA). In the context of this development and the projection of load and energy in coming days, it necessitates the construction of higher voltage level transmission line for more stable, reliable and effective carriage of power from power centers to load centers.

The main objective of the Dhalkebar substation is to connect the ongoing 400kV Hetauda-Dhalkebar-Inaruwa 400kV transmission line and the existing 132 kV S/S in the national grid.

Project intends to carry out the civil construction works for Store House Building to protect & secure Spare parts and others properties. This specification covers the general requirements for exploration, design, manufacture, factory test, supply, construction and field testing of civil and architectural works in the Store House Building under the scope of the Project.

The Contractor shall perform all the works to meet the requirements of these Specifications, the attached drawings and all the relevant Articles in these Contract Documents.

1.1 STANDARD AND REFERENCES

All equipment, materials, fabrication and tests under these Specifications shall conform to the latest applicable standards, manuals and Specifications contained in the following list or, to equivalent applicable standards, manuals and Specifications, established and approved in the country of manufacturer, and approved as equal by Employer.

ACI	American Concrete Institute
AISC	American Institute of Steel Construction
ANSI	American National Standard Institute
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing Materials
AWS	American Welding Society
JIS	Japanese Industrial Standards
DIN	Deutsches Institute für Normung

Any details not specifically covered by these standards and specifications shall be subject to approval of Employer. In the event of contradictory requirements between the standards and these Specification requirements, the terms of the Specifications shall apply.

Unless specifically mentioned, reference to standards and specifications or to equipment and materials of the particular manufacture shall be considered as followed by "or equivalent". The



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Contractor may propose equivalent specifications, materials or equipment, which shall be equal in every respect to that specified. If the Contractor, for any reason, proposes equivalents to or, deviates from, the above standard, he shall state the exact nature of the change and shall submit complete specifications of the materials, as well as copies of pertinent standards, for the approval of Employer and decision of Employer in the matter of quality shall be final.

1.2 SCOPE OF WORKS

The following works shall be carried out at each of the following substations so as to complete the civil and architectural works in all respects, as required for the proper functioning of the substations:

- Exploration works for soil strength for foundations of Store House Building.
- o Apart from proposed civil works, electrical installation, water supply and sanitary installation Store House as per BOQ quantity, specification & shall be considered part of the Contract.

A final layout for site installation for related works shall be prepared by the Contractor and approved by Employer before any construction work takes place at substation site.

- o Site clearing and stripping for related works
- o Site grading for related works
- o Foundations of Store House.
- o Supply and construction of water supply and sanitary system
- o Design, supply and installation of Illumination systems.
- o Supply and installation of miscellaneous outdoor facilities
- All associated and necessary civil and architectural works to complete the specified scope of work

1.2.1 Working Schedule

A binding graphical working schedule with an explanatory report shall be submitted before the construction period. The working schedule and any amendments to it during the construction period will require Employer's approval.

1.3 GENERAL NOTES FOR CONTRACTOR AND DEFINITIONS

- 1.1 The work shall be carried out according to the specifications whether specifically mentioned in it or not. No extra in any form shall be paid unless it is definitely stated as an item in the Bill of Quantities. Whenever the specifications are not given or ambiguous, the relevant International Standards and further amendments or decision of the Employer/Engineer shall be considered as final and binding.
- 1.2 The work shall be carried out simultaneously with the electrical, plumbing, sanitary and other services and in cooperation with the contractors of the above services. The work shall be carried on till it is completed satisfactorily along with the completion of essential portion of other services. The contractor shall keep the other contractors informed well in advance of the proposed program of the work so that the proposed



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work is not hindered. The contractor shall further cooperate with other contractors in respect of any facilities required by them e.g. making holes in shuttering for pipes, electric conduits, fan hooks etc. However, nothing extra shall be admissible to him for such reasonable assistance and facilities afforded to other contractors and the contractor shall be deemed to have taken factor into consideration while quoting his rates.

- 1.3 The work shall be related to the drawings which the contractor is presumed to have studied. All the engineering construction drawings as required for construction shall be prepared by the Contractor and submitted to the employer for approval. Nothing extra will be paid for preparation of construction drawing and any item because of its shape, location or other difficult circumstances, even if the schedule makes no distinction as long as the item is shown in the drawing.
- 1.4 The source of materials stated in the specifications are those from which materials are generally available. However, materials not conforming to the 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.

Where terms "Resident Engineer/Employer ", "Representative", "Contractor", "Works" etc. are used, they shall have the meaning defined in the Conditions of Contract or defined in the subsequent specification.

- 1.5 "Owner" shall mean,

**Nepal India Electricity Transmission and Trade Project
Transmission Directorate
Nepal Electricity Authority
Kharipati, Bhaktapur**

- 1.6 The requirements of specifications for the materials shall be fulfilled by the Contractor without extra charge including transportation or any other taxes involved that are the item rates quoted shall be deemed to have taken these into account.

2. GENERAL OFFICIAL ACCESSORIES

2.1 OFFICE ACCOMMODATION

The contractor shall provide at his own expense adequate temporary accommodation and toilet facilities for his worker as well as working office space for his staffs and Employer/ Engineer on duty for construction supervision and keep the same in good order. This may be done to suit site conditions with the approval of the Employer / Engineer. The above mentioned temporary structures shall be removed on the completion of works at contractors own cost.

2.2 BOARDS



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A board of size of 1.5m x 1.0m shall be made and put at an approved place on the site. This board shall be painted in approved colour with names of (a) The proposed construction and owner (b) The Contractor (c) The Engineer/Employer and (d) any other specialist consultant, as directed by the Employer/ Engineer. This shall be provided by the Employer/Engineer.

2.3 DRAWING, INSTRUCTION, MEASUREMENTS

All the work shall be done according to the drawings and instructions of the Employer/ Engineer and the Contractor shall arrange to test materials and/ or portions of the works at his own cost in order to prove their soundness and sufficiency. If after any such test and in the opinion of the Employer/ Engineer any work or portion of work is found to be defective or unsound, the Contractor shall pull down and re-execute the same at his own cost. Defective materials shall be removed from the site.

2.4 PREPARING AND CLEARING THE SITE

The site described and shown on the plans shall be cleared of all obstructions, loose stones and materials, rubbish of all kinds as well as brush-wood. All holes or hollows whether originally existing or produced shall be well rammed and levelled off as directed.

2.5 TREES

No trees shall be cut without prior permission. If any trees have to be cut, this shall form an extra item. For the purpose of the specification a tree shall be defined as growth whose circumference of the trunk at 300mm from the base is not less than 900 mm.

2.6 MEASURING MATERIALS

Materials requiring measuring shall be measured separately in boxes of appropriate sizes before being mixed. They should be calibrated and marked with red if necessary in presence of the Employer/Engineer.

2.7 TEMPORARY PROTECTION

All trenches, walls, newly laid concrete or other work requiring protection from weather or accidental injury shall be protected by means of tarpaulin or in any other way so as to keep the work safe. Nothing extra shall be paid for this matter.

2.8 QUALITY OF WORK

Materials, tools and plants and workmanship shall be the best of several kinds obtainable in the market and as approved by the Employer/ Engineer.

2.9 LEAVE CLEAN

On completion, all works must be cleaned, rubbish removed and the works and land cleaned of surplus materials, debris and other accumulations and everything left in clean and orderly condition.

2.10 SAMPLES



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Samples of each class of work required shall be submitted by the Contractor for the approval of the Employer/ Engineer and after such approval these samples shall be deposited at a place chosen by the Employer/ Engineer. The Contractor will be required to perform all works under the contract in accordance with these approved samples.

2.11 PROVISIONAL ITEMS

All provisional items in the schedule shall be carried out at the discretion of the Employer/Engineer, and may or may not form part of the contract. In case, the provisional items are carried out by the Contractor the rates shall be settled as for extra items as stated in the conditions of contract.

2.12 STORAGE

Safe, dry and proper storage shall be provided for all materials, particularly for cement. The capacity of the cement storage shall be equal to one-fourth of the total quantity to be used but may not exceed 200 tonnes at the site of work.

2.13 CONTRACTOR'S LABORATORY

The Contractor shall provide a laboratory with equipment at his own cost within 25 days after signing the "Form of Agreement" then maintain till the Contract period for carrying out the tests therein under the supervision of the Employer/ Engineer to be removed on completion of the work. The laboratory shall be at least 20 meter square housed in a weatherproof building designated and used exclusively for the purpose of testing. The laboratory shall be maintained in a clean, tidy and orderly fashion to the satisfaction of the Employer/ Engineer. The Contractor's laboratory shall have the following equipment in working condition, labour and materials required for tests.

Universal testing machine 100 tons with Compression and tension	...	1 set.
Standard I.S. Sieves for testing sand and Aggregates up to 40mm.	...	2 set.
Weighing balance up to 10 kg.	...	1 set.
Field balance minimum 5 gm.	...	1 set.
Weighing scale minimum 1 gm.	...	1 set.
Glass measuring flask 1/2 liter and 1 liter	...	4 sets.
Oven for sand drying	...	1 set.
Slump cone	...	1 set.
Cube molds metal for one casting	...	6 nos.



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Water tank for curing of concrete cubes, work benches, tables, etc. to the satisfaction of the Employer/ Engineer ... 6 sets.

Alternately, if the Contractor is unable to provide the laboratory, the testing of construction materials shall be done in another laboratory with prior approval of the employer.

2.14 SURVEYING EQUIPMENT

The Contractor should supply following surveying instrument if necessary and required for above for checking of contractor's work to the Employer/ Engineer.

- | | | | |
|----|---------------------------------------|---|---------|
| a) | Theodolite (least count 10") | - | 1 set. |
| b) | Level (Dumpy level) | - | 1 set. |
| c) | Measuring tape (Tazima Standard) | - | 2 sets. |
| d) | Necessary staff and other equipments. | | |

The Contractor shall maintain the equipment in a serviceable condition and immediately corrected or replaced if it is found to be inaccurate. The contractor must perform the concrete cube casting and testing in presence of Employer/ Engineer and as directed by him. All casting of testing cubes should be carried out at actual site condition and should be cured according to the main casted slab or beams. The Contractor shall perform tests on materials and concrete cubes as specified as presence of the Employer/ Engineer and as directed by him and shall submit to the Employer/ Engineer two copies of the results of each test, such results being entered on forms as approved by the Employer/ Engineer. The third copy of the result of each test shall be retained in the Contractor's Laboratory. Without relieving the Contractor any of his responsibilities for the testing of materials the Employer/ Engineer may, as and when desired, carry out any of the tests, using the facilities provided by the Contractor, for this work.

3. MATERIALS

3.1 GENERAL

The materials supplied and used in the works shall comply with the requirements of these Specifications. They shall be new, except as may be provided elsewhere in the Contract or permitted by the Employer/ Engineer in writing. The materials shall be manufactured, handled and used in a workmanlike manner to ensure completed work in accordance with the Contract. Where an Indian Standard is specified, the latest version of the standard quoted shall be considered to apply.

3.2 SOURCES

The source of materials should be selected and notified to the Employer/ Engineer and approved by him. The use of any one kind or class of material from more than one source is prohibited, except by written permission of the Employer/ Engineer. Such permission, if granted, will set forth the conditions under which the change may be made. The source or kind of materials shall not be changed at any time without written permission of the



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Employer/ Engineer. If the product from any source proves unacceptable at any time, the Contractor shall make such arrangements as may be necessary to assure acceptable material, either by alterations in plant operations or by a change of source. Claims for increased costs which may be occasioned by such alterations or changes will not be given consideration, unless the source of the unacceptable material was designated in the Contract as a source of material.

When any manufactured product, either new or used, is furnished by the owner, the location at which such material will be delivered to the Contractor will be designated in the contract. In such cases the contractor shall haul the materials from the designated delivery point to point of use, and compensation for such hauling will be considered to be included in the Contract unit price for placing the materials in the finished work.

3.3 INSPECTION AND ACCEPTANCE OF MATERIALS

Final inspection and acceptance of materials will be made only at the site of the work. The Employer/ Engineer reserves the right to sample, inspect and test materials throughout the duration of the work, and to reject any materials which are found to be unsatisfactory at the time of use.

A preliminary inspection of materials may be made at the source for the convenience of the Contractor, but the presence of Employer/ Engineer at the source shall not relieve the Contractor of the responsibility of furnishing materials which comply with these specifications. The Employer/ Engineer shall have free entry at all times to those parts of any plant which concern the manufacture or production of the materials ordered.

3.4 SAMPLES AND TESTS

The Contractor shall submit sample of all materials for the approval of the Employer/ Engineer prior to commencement of work. The Contractor shall give immediate notification of the placing of orders for shipment of materials to permit testing. He shall furnish without charge all samples required and he shall afford such facilities as the Employer/ Engineer requires for collecting and forwarding such samples.

The Contractor shall not make use of or incorporate into the work the materials represented by the samples until the tests have been made and the materials are found to comply with the requirements of the specifications, except that any materials which have a satisfactory record of compliance with the Specifications may, at the discretion of the Employer/ Engineer, be used until the tests are completed. If the material fails to pass the tests, no further use thereof shall be made until the Contractor has taken steps satisfactory to the Employer/ Engineer to correct the deficiencies.

When required by the Employer/ Engineer preliminary samples of the character and quantity prescribed shall be submitted by the Contractor or producer for examination and shall be tested in accordance with the methods referred to in this Specification. The acceptance of a preliminary sample, however, shall not be construed as acceptance of materials from the same source delivered later. Only the materials actually delivered for the work will be considered, and their acceptance or rejection will be based on the results of the tests and inspections prescribed in these Specifications.

3.5 DEFECTIVE MATERIALS



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All materials which do not conform to the requirements of the Contract will be rejected whether in place or not. They shall be removed immediately or taken away from the site immediately thereafter. No rejected material, the defects of which have been subsequently corrected, shall be used in the work unless approval in writing has been given by the Employer/ Engineer. Upon failure of the Contractor to comply promptly with any order of the Employer/ Engineer given under this Clause, the Employer/ Engineer shall have authority to cause the removal and replacement of rejected material and to deduct the cost thereof from any monies due to the Contractor.

3.6 TRADE NAMES AND ALTERNATIVES

For convenience in designation in the Contract, certain articles or materials to be incorporated in the work may be designated under a trade name or the name of a manufacturer and his catalogue information. The use of an alternative article or material which is of equal quality and of the required characteristics for the purpose intended will be permitted, subject to the following requirements:

- a) The burden of proof as to the quality and suitability of alternatives shall be upon the Contractor and he shall furnish all information as required by the Employer/ Engineer. The Employer/ Engineer shall be the sole judge as to the quality and suitability of all alternative articles or materials and his decision shall be final.
- b) Whenever the specifications permit the substitution of a similar or equivalent material or article, no tests or action relating to the approval of such substitute material will be made until the request for substitution is made in writing by the Contractor accompanied by complete data as to the quality of the material or article proposed. Such request shall be made in ample time to permit approval without delaying the work.

3.7 FOREIGN MATERIALS

Materials which are manufactured, produced or fabricated outside Nepal shall be delivered to a distribution point in Nepal, unless otherwise required in these specifications or the special provisions, where they shall be retained for a sufficient period of time to permit inspection, sampling, and testing. The Contractor shall not be entitled to an extension of time for acts or events occurring outside Nepal and it shall be the Contractor's responsibility to deliver materials obtained from outside Nepal to the point of entry into Nepal in sufficient time to permit timely delivery to the job site. The Contractor shall provide the facilities and arrange for any testing required at his own cost. All testing by the Contractor shall be subject to witnessing by the Employer/ Engineer. The manufacturer, producer or fabricator of foreign material shall furnish to the Employer/Engineer a "Certificate of Compliance" with the specifications where required. In addition, certified mill test reports clearly identifiable to the lot of material shall be furnished where required in these specifications or otherwise requested by the Employer/ Engineer. Where structural materials requiring mill test reports are obtained from foreign manufacturers, such materials shall be furnished only from those foreign manufacturers who have previously established, to the satisfaction of the Employer/ Engineer, the sufficiency of their in-plant quality control, as deemed necessary by the Employer/ Engineer, to give satisfactory assurance of their ability to furnish material uniformly and consistently in conformance with these specifications. At the option of the



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Employer/Engineer, such sufficiency shall be established whether by submission of detailed written proof thereof or through in-plant inspection by the Employer/ Engineer.

3.8 CONTRACT DOCUMENTS

The Contractor is bound to execute and realize the Project works covered under these contract documents.

These contract documents to cover the said work shall along with that is normally understood therein comprise of

- a) These Tender Documents.
- b) All Tender and Working Drawings issued by the owner prepared by this Employer/ Engineer.
- c) All site instructions made in the site order book or log book by the Employer/ Engineer.
- d) All instructions given to the contractor by the Employer/ Engineer be in the form of sketches, directions along with requests for additional data, shop drawings, measurements details etc. from the contractor related of this work.
- e) All shop drawings and samples approved by the Employer/ Engineer.
- f) All manufacturer's specifications, data brochures information etc. approved by the Employer/ Engineer.
- g) All aspects of work checked and approved by the Employer/ Engineer either on, or off, the project site.
- h) All samples and guidelines that the Employer/ Engineer shall instruct the Contractor to follow. In particular covering all works where the contractor shall follow the existing designs, decoration, methods of construction, finishes proportions, elevations etc. of the existing building.

4. EXCAVATION OF EARTH FOR FOUNDATION AND OTHERS

4.1 LAYOUT AND SITE CLEARANCE

Laying and setting out of buildings, pipe lines and septic tank and soak pit including site clearance by removal of grass, shrubs etc. maximum depth of excavation and filling 0.30 m. including dressing and levelling.

The Contractor is required to accurately lay out each structure and other facilities as per the instructions and guidance of the Employer/Engineer and his representative at site. For this the Contractor has to establish points for foundations of the structures as shown in the drawings by establishing reference points fairly permanent to enable regular confirmations by the Employer/Engineer for their accuracy. Ground levels have to be established near to each



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structure as well for common height control of the structures as per the specific instructions of the Employer/ Engineer.

The site described in plan shall be cleared of all grass, shrubs etc. The maximum depth of excavation or filling shall be 0.3 m. The surplus excavated material shall be disposed within a lead of 200 m as directed.

4.2 EARTH WORK

Earthwork in excavation in trenches, raft foundation etc. in soil including dressing of sides, ramming of bottom, lift up to 2.75m. stacking of excavated materials at least 4 m clear from the edge of excavation and then returning the stacked soil in 0.15m layer when required in plinth, under floors, sides of foundations, laying and depositing the layer by watering and ramming and then disposing of all surplus excavated soil as directed within a lead of 200 m.

4.2.1 EXCAVATIONS

The foundation rafts etc. shall be excavated to the dimensions shown on the drawings and to depth, at which in the opinion of the Employer/ Engineer stratum of good hard soil is observed.

The excavation shall be carefully carried out to the levels, shapes and dimensions as shown in the drawings or as directed by the Employer/ Engineer to receive the concrete work. Should any of the excavation be taken down below the specified levels, the Contractor shall fill in such excavation at his own expense with concrete well rammed in position until it is brought upto the proper levels. Filling in with excavated materials will not be allowed for this purpose. No extra charge will be given for the lift of the excavated materials up to 2.75m. The excavated earth shall be stacked at least 4m from the edge of foundation. The Contractor, at his own cost, shall dispose off all surplus excavated soil as directed by the Employer/ Engineer within a lead of 200m.

If foundations are made broader or longer than directed, the extra length and breadth shall be filled in after the foundations are built with earth rammed hard, by the Contractor at his own cost. The Contractor shall at his own expense and without extra charge, make provision for all extra excavation in slope, pumping, dredging or bailing out water and these trenches shall be kept free from water while the foundation work is in progress. The Contractor shall also at his own cost remove such portions of boulders or rocks, as are required to make the bottom of the trench horizontal and level. Nothing extra shall be admissible for pumping and/or bailing out water unless otherwise taken separately in the Bill of Quantities.

The trenches, rafts shall be inspected by the Employer/ Engineer before the concrete is laid therein, when the trench level shall be recorded. The filling in of side of trench excavations can be done in not more than 0.15m layers. Each layer shall be well watered and rammed hard before adding the next layer. Such fillings shall be brought up to the ground level without extra charge and shall form part of the item of excavation.

4.2.2 TIMBERING OF TRENCHES FOR FOUNDATION AND OTHER WORK



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When foundations are to be taken deep, the sides of the trenches shall be protected by erecting timber shoring and strutting. Timbering shall be close or open depending on the nature of the soil and work. The arrangement of timbering, sizes and spacing of members shall be as directed by the Employer/ Engineer. Nothing extra on this account shall be admissible unless otherwise taken separately in the Bill of Quantities.

4.2.3 TRIMMING AND LEVELING

The bottom of all foundation should be trimmed and levelled in accordance with the drawings.

4.2.4 DISPOSAL

Disposal of the surplus earth shall be done within the site as directed by the Employer/ Engineer. Nothing extra shall be paid for such disposal within the lead of 200m. The earth excavated shall be used for filling and terracing.

4.2.5 MEASUREMENT

Measurement shall be the product of the exact length and width of the lowest step of the footings according to the drawing or the Employer/ Engineer's instructions and the depth measured vertically. Where the ground is not level, average depth shall be taken. Rate shall be inclusive of all the works described above.

Note: Rate analysis shall be submitted at the time of submission along with bill of quantities.

4.3 PLINTH FILLING/BACK FILLING

Filling in plinth with materials brought from outside in 0.15 m layers under floors including watering, ramming consolidation and dressing complete.

- a) Sand
- b) Earth
- c) Random rubble filling

The earth for filling shall be brought from within the site within a lead of 300 m, to be approved by the Employer/Engineer, prior to filling. If the earth from within the site be of unsuitable quality, earth shall be brought from outside the site. The sand shall be either a pit sand or river sand as approved.

The work shall be done with earth/sand in 0.15 m layers, each layer being well watered and rammed thoroughly.

4.3.1 MEASUREMENT

The measurement shall be taken for the consolidated thickness of earth/sand and paid in cubic meter. Pit or stack measurement shall not be done for payment. Quantity of earth fill under this item shall be calculated as the sum total of earth filling required in trenches around foundations, over raft, under floors or any other filling less the total quantity involved in



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foundation excavation. It shall include excavation of earth/sand, transportation, screening if necessary, filling and the cost of labor etc. all complete.

5. CONCRETE WORK

5.1 Plain Cement Concrete (P.C.C.) WORKS

Providing and laying plain cement concrete excluding cost of form work complete as required

- i) PCC 1:4:8 (1cement: 4 sand: 8 crushed stone aggregate)
- ii) PCC 1:2:4 (1cement: 2 sand: 4 crushed stone aggregate)

5.1.1 MATERIALS

Cement, sand and stone aggregate shall conform to the specifications as under plain Cement Concrete work for RCC works.

5.1.2 MIXING

All proportions shall be by volume except cement which shall be proportioned by weight and as specified. Mixing shall be done in a mechanical mixer as per specifications of reinforced cement concrete work. However, in special cases, hand mixing may be allowed by the Employer/ Engineer when the following procedure shall be adopted. The several materials shall be accurately gauged in boxes and thoroughly mixed on a water tight platform of adequate size, being turned over at least thrice till the color is uniform and then twice wet. Water shall be added gradually and not more than necessary or specified by Employer/ Engineer that much concrete shall be mixed which can be used within half an hour. Each stack shall however be not larger than consuming one bag of cement. All such stacks shall be placed distinct from each other.

5.1.3 LAYING

Concrete shall be laid in horizontal layers of not more than 0.15 m thick and gently rammed.

5.1.4 CURING

After laying, the concrete shall be kept wet for seven days constantly by ponding. If cast in hot weather, it shall be covered with gunny bags which shall be kept constantly wet. Other work on concrete shall not start until 3 days after laying of concrete. Concrete curing shall be done strictly for seven days. Any failure of keeping the concrete work in constant wet condition, the work will be done by Employer/ Engineer and cost of above work shall be deducted from Contractor's bill.

5.1.5 MEASUREMENT

Measurement shall be in cubic metre of exact length, breadth and depth. This shall be exclusive of any form work required to complete the item. Rate shall include all materials and labour.

6. Reinforced Cement Concrete (RCC) GENERAL



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Providing and laying PCC for RCC work with crushed stone aggregate 20 mm and down gauge well graded excluding the cost of formwork and the cost of the reinforcement

- i) M 15
- ii) M 20
- iii) M 25

6.1 MATERIALS

The materials used in the works shall be of the qualities and kinds specified. Materials delivered to the works shall be equal to the approved samples which shall be deposited with the Employer/ Engineer at least 30 days before it is required for use in work. The quantity of all necessary materials should be checked by the Employer/ Engineer for any casting. Delivery shall be made sufficiently in advance of constructional requirements to enable further samples to be selected and tested if so desired by the Employer/ Engineer. No material shall be used in the works until approved. Materials failing to comply with the approved samples and specification shall be immediately removed from the works at the Contractor's Cost.

6.1.1 WATER

Water used in mixing concrete shall be free from injurious amounts of oils, acids, alkalis, organic materials or other deleterious substances. It should be clean as drinking water.

6.1.2 CEMENT

The cement shall be ordinary Portland cement of approved brand and manufacture and shall comply in all respects with the I.S. 269-1967 for ordinary Portland cement. It shall be delivered on the site in packages with an unbroken seal fixed by the manufacturer and plainly marked with the name of brand and the manufacture. It shall be stored in a dry place, in regular piles not exceeding six bags high and in such a manner that it will be efficiently protected from moisture and contamination, and that the consignments can be used up in the order in which they are received. Set cement shall be immediately removed from the work and replaced by the Contractor at his own expense. If desired, tests shall be made by taking samples of cement from stores or elsewhere from the works. The selection of samples and procedure for testing shall comply with appropriate I.S. specification.

6.1.3 AGGREGATE

All aggregates shall conform to relevant I.S. code. The contractor shall supply samples of the aggregate for the purpose of making preliminary concrete test cubes as herein-after specified.

Whatever mentioned above all coarse aggregate used for concreting (PCC or RCC) purpose shall be **crushed type**. They shall be hard, strong, dense, durable, clean and free from veins and adherent coating. As far as possible, flaky and elongated pieces should be avoided.

Aggregate shall not contain any harmful materials, such as iron pyrites, coal, mica, shale or similar laminated materials, clay, alkali, soft fragments, organic impurities etc. in such quantity as to affect the strength or durability of the concrete or in addition to the above for reinforced concrete, any material which attack the reinforcement. Aggregate which are



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chemically reactive with the alkalis of cement are harmful, as cracking of concrete may take place. These aggregate shall be protected from spilling oils, mobiles, diesels over it on site.

6.1.4 FINE AGGREGATES (SAND)

The fine aggregate shall be natural sand or sand derived by crushing suitable gravel or stone and shall be free from coagulated lumps. Sand derived from a stone unsuitable for coarse aggregate shall not be used as the fine aggregate.

The fine aggregate shall conform to the requirements of I.S. 383 - 1970. Fine aggregate shall not contain more than 3% of material removable by decantation test, nor more than 1% dry lumps. The total of coal, clay lumps, shale, soft fragments and other deleterious substance shall not be more than 5%.

The percentage of clay lumps shall be determined by examining the various fractions that remain after the material has been tested for grading. Any particles that can be broken with fingers shall be classified as clay lumps and the total percentage of clay lumps shall be determined on the basis of the total original weight of the sample. The fine aggregate shall be well graded from fine to coarse and shall meet the following gradation requirements:

Table - 1 GRADATION FOR FINE AGGREGATE

Sieve designation Percentage by weight passing

Sieve Designation	10mm	No.4	No.16	No.30	No.50	No.100
Fine Aggregate	100	95-100	45-80	25-55	10-30	2-10

Blending will be permitted in order to meet the gradation requirements for the fine aggregate.

6.1.5 COURSE AGGREGATE

The coarse aggregate shall be crushed stone aggregate. The pieces of aggregates shall be angular. Friable, flaky and laminated pieces, mica, shale shall only be present in such quantities as not to affect adversely the strength and durability of the concrete as ascertained by tests on concrete cubes. After twenty four hours immersion in water, a previous dried sample shall not have gained in weight more than 5% and not more than 10% if it is to be used in plain concrete or elsewhere as described. The coarse aggregate shall conform to the requirements of I.S. 383 - 1970. The percentage of wear at 500 revolutions of Los Angeles Rattler Test shall not be more than 50%. The coarse aggregate shall meet the gradation of Table-2. Moreover it should conform previous specification on coarse aggregate.

Table - 2 GRADATION FOR COARSE AGGREGATE.

Percentage by weight passing

Sieve Designation	50mm	40mm	25mm	20mm	10mm	No.4	No.8
40mm & down	100	90-100	20-25	0-15	0-5		
20mm & down			100	90-100	20-25	0-10	0-5

All R.C.C. work shall be carried out in strict accordance with this specification, I.S. Specifications and the working drawings. Any discrepancies in the dimensions on the drawings or any points not clear to the Contractor shall be brought to the notice of the Employer/ Engineer or clarified in advance before proceeding with the work.



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The Contractor shall allow for all wastage in all materials. He shall also allow for all tests of concrete materials and if required produce manufacturer's certificate for cement and steel unless issued by the Owner.

- 1) All form work should be get checked for levelling and dimensions as well as all necessary supporting spouts from the Employer/ Engineer.
- 2) Only after getting the formwork checked, reinforcement should be placed properly as according to the drawing and detailing.
- 3) The date and time of any casting of concrete should be informed to the Engineer/Employer's 2 days in advance.

No concrete work shall be cast in the absence of the Employer/ Engineer. The Contractor shall personally check that both the formwork and reinforcement have been correctly placed and fixed and satisfy himself that all work preparatory to casting is completely ready, before requesting the Employer/ Engineer for final inspection and approval.

6.1.6 ADMIXTURES

The use of admixtures to improve the workability is allowed only if there is proved evidence that neither the strength nor the other requisite qualities of concrete and/or steel accessories grout, etc. are impaired by their use. The use of admixtures containing calcium chloride, fluorides, nitrates and sulphates is prohibited. The decision of the Employer/ Engineer on all matters relating to the use of admixtures shall be final.

Admixtures shall be stored in suitable waterproof building. Any material which has deteriorated or which has been contaminated whether during transit to the site, at the site or otherwise, shall not be used in the work and shall be immediately removed from the site and replaced at the expense of the contractor.

6.1.7 MIX DESIGN

Concrete mixes for various specified design strengths shall be worked out by the Contractor. The mix proportions shall be selected to ensure that the workability of the fresh concrete is suitable for the conditions of handling and placing, so that after compaction it surrounds all reinforcement or tendons and ducts and completely fills the formwork. When the concrete is hardened its quality shall be such as to comply with the strength, durability and other requirements taking into account the conditions to which it will be exposed.

Any standard method of mix design may be used. For determining the "required average strength" the specified minimum shall be taken as one in ten. Unless the Contractor can prove from his past experience that he is capable of achieving a high degree of control a "FAIR" control should be assumed in the initial mix design. Before arriving at the average strength values due regard shall be given to the criteria acceptance of site concrete.

The mixes designed by the Contractor shall be used on works only after obtaining a written approval of the Employer/ Engineer. It is to be understood that the mix design shall be entirely the responsibility of the Contractor and such approval by the Employer/ Engineer shall not relieve him of his responsibility in respect thereof. Sand shall be of an approved quality, clean, sharp and free from injurious amount of dust, mica, shells, soft and flaky



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particles, shale, alkali, organic matter, loam or other deleterious substances. The sand shall be taken from a source approved by the Employer/Engineer and if required by him it shall be thoroughly washed, screened and graded by the contractor at no extra cost and to the satisfaction of the Employer/ Engineer.

The whole of the ingredients of the coarse aggregate shall consist of hard stones and shall contain no soft or elongated pieces. If it is considered necessary, the Employer/ Engineer may instruct it to be washed, screened and graded at no extra cost.

6.1.8 MEASUREMENT AND PROPORTIONING OF CONCRETE MATERIALS

The aggregate shall be measured by volume in a gauge box of correct and approved size based on the weight of the material or by other approved accurate means. The gauge box or other container shall be filled with the aggregate without compacting to a predetermined uniform depth, accurate allowance being made for bulking due to moisture content of the fine aggregate, if required on site.

The cement shall be measured by weight, one or more complete bags containing 50 kgs. being used for a single batch of concrete and as the size of the mixer shall permit this to be done. One weighing machine shall be placed in standby condition on casting day and if the Employer/ Engineer feel that any concrete bag contains less than 50 kg, he can measure the weight of it and will direct the Contractor to fulfil necessary weight of cement from contractor's side.

The normal proportions of cement and aggregate shall comply with the quantities specified below for the concrete described for each part of the work. The specified quantities shall be altered if instructed after examination of the aggregate materials in samples or in bulk in order to obtain the dense concrete with approved materials. Any such alterations within the range of 1 part of fine aggregate to $1\frac{1}{2}$ parts of coarse aggregate and 1 part of fine aggregate to $2\frac{1}{2}$ parts of coarse aggregate shall be made without any alteration in the charge made by the Contractor.

6.2 PROPERTIES OF CONCRETE

The minimum cement content of the mixture shall be as below in specified in clause no 6.2.1

6.2.1 CONCRETE PROPORTIONS

The minimum cement content of mixture shall be as below:

Grade	Minimum cement content in Kg/cu.m.
M 15	300
M 20	400
M 25	550

6.2.2 WATER CEMENT (W/C) RATIO



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In general, w/c ratio of the concrete mix shall be kept minimum during casting. Generally one bag of cement concrete mix shall use 35.6 litres of water or as necessary. As moisture content of fine and coarse aggregate varies, for workability of concrete mix, the Employer/ Engineer may vary the water quantity and once the water quantity to be placed for one bag of cement concrete mix, is fixed by the Employer/ Engineer, the Contractor shall follow it strictly. As information to the Contractor, the Employer/ Engineer will depute one checking supervisor to the mixing batch, the quantity of water used shall be varied to suit the moisture content of the aggregate, and shall be just sufficient to produce a dense concrete, consistent with practical workability.

6.2.3 CONCRETE GRADE AND STRENGTH

The compressive strength (cube strength) for Portland cement concrete shall be in accordance with I.S. 456-2000.

Grade	Preliminary Test at 7 days	Work Test at 28 days
M15	110 Kg/cm ²	170 Kg/cm ²
M20	135 Kg/cm ²	210 Kg/cm ²
M25	185 Kg/cm ²	285 Kg/cm ²

6.2.4 CONTROL OF CONCRETE

(i) Preliminary Tests

The Contractor shall be called upon to submit representative samples of materials to be used for concrete in order that they may be tested at a laboratory and the suitability of materials established. All expenses in connection with the above materials, tests shall be done by the Contractor.

(ii) Works Cube Tests

During the progress of the work, 15 cm cubes shall be made as per I.S. 456-2000 as necessary and tested in accordance with I.S. 516-1959.

6.2.5 MEASUREMENT OF CONSISTENCY

The consistency shall be determined by making trial mixtures with dried aggregate. The consistency of the trial mixture of approved consistency shall be measured as instructed.

The slump of approved trial mixture shall be measured and this slump shall not be exceeded throughout all batches of concrete made from the same materials mixed in the same proportions as the trial mixtures and used in these parts of the works as instructed. In no case, the slump shall exceed 50mm. for concrete in slabs, or exceed 25 mm. for consolidated by mechanical vibration. The slump test shall be made on concrete actually being placed in the works at the commencement of each grade of concrete placing and such other times as instructed.

The apparatus used for the slump test shall be standard cone. When cone is filled, it shall be raised vertically clear of the concrete and the measurement of the slump shall be measured.



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Care shall be taken to prevent vibration of the sample being tested. If the Employer/ Engineer requires the use of other means for testing the consistency of the concrete it shall be done as instructed without any extra charge. For this standard I.S. Method shall be followed.

6.2.6 CONCRETE MIXING

The cement and aggregates shall be thoroughly mixed together in the specified proportions by volume or weight in a batch type mechanical mixer, unless another type of mixer is approved. The water shall be admitted to drum of the mixer only when all the cement and aggregates constituting one batch be in the drum. The concrete shall be mixed until the mixer is of uniform color and in no case for less than one minute. If the drum rotates at lower speeds, the minimum period shall be increased inversely proportional to that speed. The period of mixing shall be measured from time when all the materials and water are in the drum. The entire contents of the drum shall be discharged before materials for the succeeding batch are fed into the drum. Materials spilled from the skip or other container shall not be used. No partly set or frozen concrete shall be used in the work. Partly set concrete shall not be remixed with the cement or aggregate of the next batch.

6.2.7 DISTRIBUTION OF CONCRETE

The concrete shall be distributed from the mixers to the position of placing in the works by approved means that do not cause segregation or otherwise impair the quality of the concrete. While transporting concrete over slabs and over beams by any suitable means, the contractor shall conform that the tied bar i.e. upper bar and lower bar shall not get distorted or displaced from its original place.

6.2.8 PREPARATIONS FOR PLACING CONCRETE

Before the concrete is placed, the shuttering shall be tied - up and any water accumulated therein shall be removed. All saw dust, chips, nails, and other debris shall be washed out or otherwise removed from within the formwork. The reinforcement shall then be inspected for accuracy of fixing. Immediately before placing the concrete, the formwork shall, except in frosty weather, be well wetted and inspection opening closed.

6.2.9 PLACING CONCRETE

The interval between adding the water to the dry mix and completion of the concrete placing operation shall not exceed 20 minutes nor, when an approved admixture that accelerates the initial setting of the cement be used, exceed ten minutes or as directed by the Employer/ Engineer.

Except where otherwise approved for slabs and large sections concrete shall be placed in the formwork by shovels or other approved implements and shall not be dropped from height more than 1.5 m nor handled in a manner to cause segregation. Accumulations of hardened concrete dropping on the reinforcement shall be avoided. Concrete shall be sorted along the formwork to that position.

Each layer of concrete while being placed shall be compacted by approved methods of ramming or mechanical vibrations to form a dense surface free from honey combing and tolerably free from water marks and air holes or other blemishes. The concrete shall be tamped against the face of the formwork so as to produce dense fair surface. The number and



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type of mechanical vibrations shall be approved before compacting by vibration. Placing and compaction of concrete shall be done in such a manner as not to disturb concrete already placed, and reinforcement projecting from concrete already placed shall not be vibrated or jarred. For concreting reinforced concrete walls and other structures having least lateral dimensions of 13mm. or under, each layer of concrete while being placed shall be properly compacted by approved methods of mechanical vibrations produced by internal or external mechanical vibration.

The laying of concrete over slabs should be uniform thick of required thickness after vibration. This can be conformed by dipping wooden pegs of required length. The level of all slabs should be in level unless otherwise specified and directed by the Employer/ Engineer. If required, the Employer/ Engineer will check the thickness and give order to the contractor to fill up the newly vibrated slab concrete surface. Any slab thickness after construction, if found less thickness than specified, the contractor will be responsible for above job.

Any water accumulating on the surface of the newly placed concrete shall be removed by approved means and no further concrete shall be placed thereon until such water is removed. No fresh concrete shall be brought into contact with the concrete containing cement of different type. Unless otherwise approved or instructed, concrete shall be placed in a single operation to the full depth of slabs, beams, and members similar thereto and shall be placed in horizontal layers not exceeding 0.50m deep in walls, columns until completion of the part of the work between construction joints as specified hereafter or of a part of approved extent. At the completion of a specified or approved part of a construction, joints of the form and in the position herein after specified shall be made. If a temporary cessation of concrete placing be unavoidable elsewhere, a construction joint shall likewise be made.

6.3 PLACING CONCRETE IN EXTREME WEATHER

Work shall be done according to clause 20.1.6 of I.S. 456- 2000.

6.4 VIBRATION

6.4.1 APPEARANCE

The concrete that is to be compacted by vibration should appear anything from earth dry to slightly glistening. The mix should have the appearance of lacking in fines.

6.4.2 VIBRATORS

The contractor must use vibrator on beams and slabs to compact the newly laid concrete. Generally two types of vibrator shall be used.

a) NEEDLE OR IMMERSION TYPE OF VIBRATOR

Casting fall beams and columns shall be compacted by means of needle type of vibrator. 4" dia needle type vibrator shall be used over beam section more than 350mm x 400mm and rest of section need only 2" dia needle type vibrator.

b) FLAT BOTTOM VIBRATOR FOR SLABS



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The contractor shall require flat bottom type of vibrator to compact all concrete over slabs. No immersion type of vibrator will be allowed to compact the concrete over slab.

Moreover, the contractor shall require at least two number of vibrator for one casting and other should kept in standby position. In case vibrator got damaged or not in working condition during casting, the vibrator shall be immediately replaced. If the contractor shall fail to replace another vibrator during casting, no further casting of concrete will be permitted. The contractor shall in that case, immediately remove the remaining concrete mix from the site of work.

6.4.3 PLACING

Segregation is likely to take place when the concrete is tipped into the form work and this should be avoided. The concrete mix should not contain surplus water and sand which will develop segregation under influence of vibratory compaction. The distribution of new concrete should be uniform over the whole section and the surface kept horizontal all the time thus ensuring the movement of concrete is downward only. Vibrators shall not be used as a spreading or distributing agent.

The vibrators shall be of rotary out of balance immersion type or the electro-magnetic type and operate at a frequency of not less than 4,000 cycles per minute. The vibration shall be of such a power - input as to produce an acceleration of 1 to 3 m/sec in the mass of the compacted concrete. The vibrators shall be provided for continuous operation.

6.4.4 DISPOSITION OF VIBRATORS

Internal vibrators shall be disposed within the mix, when placed, so as to maintain the whole of the concrete under treatment in an adequate state of agitation such that de-aeration and effective compaction may be attained at a rate commensurate with the supply of concrete from the mixers. Insertion of vibrators at about 450 mm centre to centre is considered sufficient.

6.4.5 PERIOD OF VIBRATION

Vibration shall continue during the whole period occupied by placing the concrete, the vibration being adjusted so that the centre of vibration approximates to centre of the mass being compacted at the time of placing. The concrete should not be over vibrated and the period of insertion of internal vibrator should be about 15 seconds at any point.

6.4.6 COMPACTNESS

The concrete shall be judged to be compacted when the mortar fills the spaces between the coarse aggregate so as to form a glistening and even surface except for slight irregularities where the coarse aggregate breaks this smooth surface. When this condition has been attained, the vibrators shall be withdrawn slowly.

The vibrator must not be placed against the steel or the formwork, the minimum distance being 8 mm. It must be placed in such a position that formwork, reinforcement and recently laid concrete are subjected to the minimum amount of vibration.

6.4.7 CONSTRUCTION JOINTS



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Construction joints shall be made in the positions hereinafter specified or elsewhere as approved. Such joints shall be truly vertical or horizontal as the case may be, except that in an inclined or curved members the joint shall be strictly at right angles to the axis of the member.

Construction joints shall be made horizontally at the top of the foundations and horizontally 8 mm. below the lowest beam soffit at the head of columns. Concrete in the ribs and slabs of small tee, all beams shall be placed in one operation, but, for large beams concrete in the rib upto a level 2.5 mm. below the slab soffit shall be placed first. Concrete in haunches or splays on the beams or braces and concrete in the head of adjoining portion of the columns shall be placed at the same time as that in the beams or braces. Concrete in splays at the junction of walls and slabs shall be placed at the same time as that in the slab. Construction joints in the length of a beam shall be avoided where practicable, but where joints are unavoidable they shall be made as previously approved by the Employer/ Engineer. Construction joints in slabs shall be made parallel to the main reinforcement, and where required at right angles to the main reinforcement, they shall be made at a place previously approved by the Employer/ Engineer.

Before placing new concrete against concrete already set, the face of the old concrete shall be cleaned and scum removed. The face shall be roughened and any loose aggregate removed there from. Immediately before placing the new concrete the face of the old concrete shall be thoroughly wetted and a coating of neat cement grout applied. The new concrete shall be well rammed against the prepared face before the grout sets. Construction joints will not be paid separately.

6.4.8 PROTECTION AND CURING OF CONCRETE

Immediately after placing or finishing, concrete surface not covered by forms shall be protected from loss of surface moisture for at least seven days when the average daily temperature is at least 21°C, where Portland cement has been used. Protection from loss of surface water shall be done by any of the following methods where applicable to the type of work involved:

- i) By water covering.
- ii) By covering of surfaces with water impervious paper.
- iii) By application of approved impervious membrane.

Surfaces from which forms have been removed before the curing period has elapsed shall be protected as specified for surfaces not covered by forms. Membrane curing shall not be used on surfaces required to receive additional concrete or concrete fill, or on cement finish costs that are to receive dust proofing or hardening treatments, or during hot weather.

Water curing shall be performed by keeping the concrete surface wet by ponding, by continuous spraying or by covering the surface with an approved water-saturated covering such as 2.5 mm. of sand or sawdust, or by one or more layers of burlap. The exposed concrete surfaces shall be saturated with water throughout the full stipulated curing period. Where forms remain in place during the curing period, they shall be kept sufficiently wetted with clean water to reduce cracks and to prevent joints from opening in the forms.



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The impervious membrane curing Boundary shall be an approved non-bituminous, colourless, liquid sealing Boundary in atomized form so as to preserve the natural color of the concrete. The curing Boundary shall be applied as soon as surface water has disappeared from concrete surfaces with approved pressure spraying equipment in accordance with the manufacturer's directions and in sufficient thickness to form an effective water seal. No compounds shall be used which will adversely affect the subsequent installation of finished flooring.

Joints of sheet membrane used for curing shall be lapped at least 150mm and sealed with water proof tape as recommended by the manufacturer. Polyethylene sheet shall be considered the water-impervious paper for purposes of interpretation of this item. No liquid curing compound may be used without specific written approval of the Employer/ Engineer regarding type, manufacturer, location and extent of use and application procedures.

6.4.9 FINISHES

The concrete surface shall in general be smooth finish. However, immediately after stripping form work, minor defects and honey combed areas shall be patched and holes filled before the concrete is thoroughly dry, patch areas shall be chipped away to 2.5 mm depth, with regular edges perpendicular to the surface. Area to be patched shall be thoroughly wet including the areas at least 150 mm. wide entirely surrounding them, just prior to placing the patching mortar. Mortar shall be of the same material and proportions as used for the concrete, without coarse aggregate. A sufficient quantity of white cement shall be substituted for part of the ordinary cement so that the patching mortar, when dry, will match the surrounding concrete. Water in the mix shall be kept to a minimum and mortar shall be retempered without adding water and shall be allowed to stand for one hour prior to use during which time it shall be mixed to prevent setting. The mortar shall be thoroughly compacted into place, screeded so as to leave the patch slightly higher than surrounding surfaces, left undisturbed for one to two hours to permit initial shrinkage and finished to match the adjoining work. Where patches exceed 2.5 mm. deep, they shall be trimmed and wet as specified, after which the opening shall be filled to within 2.5 mm. of the surface. After sufficient shrinkage time has elapsed, the patching shall proceed as described above.

Patches shall be kept wet for five days. Tie holes left by the withdrawal of rods, or holes left by removal of ends of ties shall be filled solidly with mortar. For holes passing entirely through the wall, plunger-type grease gun or other device to force mortar through the wall, starting at the back face, shall be used. When a hole is completely filled, excess mortar shall be struck off with a cloth flush with the surface. Holes not passing entirely through walls shall be filled solidly with mortar. Any excess mortar shall be struck off with a cloth on the wall surface. The surface of non-shuttered faces concrete work other than slabs shall be smoothed with a wooden float (or if approved with a steel trowel) to give a finish equal to that of the rubbed down shuttered faces. Concealed concrete faces shall be left as it is except that honeycombed surfaces shall be made good.

The top faces of slabs not intended to be surfaced shall be levelled and floated to a smooth finish at the levels or falls shown on the drawings or elsewhere.

The floating shall not be executed to the extent of bringing excess fine material to the surface. Ribbed surfaces of slabs shall where instructed be formed at the time of taming and levelling. Indentation in slab or stair surfaces shall be formed by approved implements giving the depth



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and patterns instructed. The top faces of slabs intended to be covered with screed, granolithic or similar surfacing shall be left with a spade finish.

The soffits of slabs and faces of walls intended to be rendered shall be roughened by approved means to form a key. Concrete surfaces to take finishes other than those specifically referred to herein shall be prepared in an approved manner to suit the finish as instructed.

6.5 TESTS ON STRUCTURE

The Employer/ Engineer shall instruct that a loading test be made on the works or any part thereof if in his opinion such a test be deemed necessary for one or more of the following reasons:

- a) The site - made concrete test cubes failing to attain the specified strength.
- b) Over - loading during construction of the works or part thereof.
- c) The shuttering being prematurely removed.
- d) Concrete improperly cured.
- e) Any other circumstances attributable to alleged negligence on the part of the Contractor which in the opinion of the Employer/ Engineer may result in the works or part thereof being less than the expected strength.
- f) Any reason other than the foregoing.

The test shall be made at the contractor's own cost. If the test be instructed to be made for one or more of the reasons from (a) to (e) inclusive, and If the test be instructed to be made for the reason (f), the contractor shall make the test and shall be reimbursed for all cost relating thereof irrespective of the result of the test.

For the purpose of the load test on floors, roofs and similar structures and their supports, the test load shall be equivalent to 1 and 2/3 times the superimposed load for which the works or part thereof to be tested have been designed. The test load shall not be applied within 90 days (or 28 days if rapid hardening Portland cement be used) of the completing of placing of the concrete in the part of the works to be tested, and the latter shall not be supported during the test by shuttering or other no permanent support. Means shall be taken to ensure that in the event of a failure under the test temporary support of the loaded member shall be immediately available. The test shall proceed strictly as instructed. For the loading test on floors, roofs or similar structures the result shall be deemed satisfactory if upon removal of the test load the residual deflection does not exceed one - quarter of the maximum deflection after 24 hours loading. If the residual deflection exceeds this amount the test loading shall be repeated, and the result shall be deemed to be satisfactory if the residual deflection after removal of the second test load does not exceed one-quarter of the maximum deflection occurring during the second test.

If the result of the loading test be not satisfactory, the Employer/ Engineer shall instruct that part of the works concerned shall be taken down or removed and reconstructed to comply with this specification, or that such other remedial measures shall be taken as to make the works secure. If the test be instructed to be made for one or more of the reasons (a) to (e) inclusive as herein before specified, the Contractor shall take down or remove and reconstruct the defective work or shall take the remedial measures instructed at his own cost.

6.5.1 MEASUREMENT



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In calculating the contents of any R.C.C. member, for measurement proposes the dimensions adopted shall be structural concrete members exclusive of any finish,

6.5.1.1 RAFT SLABS AND BEAMS

It shall be measured in cu.m. of work done as per drawing. Measurement shall be done for the raft concrete below the column junction to the raft slab/beam. Nothing extra shall be paid for any odd size or shapes.

6.5.1.2 BEAMS

Measurement shall be between R.C.C. columns or resting on walls cubic metre of the work done as shown on the drawing. The depth shall be taken from the bottom of the stem to the top of the slab or projections if any. Lintels when connected to main RCC structure shall be measured as beams.

6.5.1.3 COLUMNS

These shall be measured in cu.m. of work done according to the drawings from top of the footing or raft slab to the top of slab in case of ground floor and from top of slab to the top of slab for all other floors. Unless specified otherwise nothing extra shall be admissible for any odd size and for any special section and shape of column i.e. square, rectangular, round, elliptical etc. and laid at any angle as may be shown on drawings.

6.5.1.4 SLABS

These shall be measured in cubic metre of the work done as per drawings. These shall be measured from beam to beam, wall to wall or beam to wall including bearing part on the wall. Unless otherwise specified in the schedule nothing extra shall be admissible for slabs laid to slope, canopy slabs or those of any shape or section any cantilevered part of any projections small or big beyond the bearing beam or wall as may be shown on drawings or the slabs sunk for lavatory. Plaster shall be paid for separately.

6.5.1.5 WALLS

These shall be measured from end of slab/column/beam, termed wall. It shall be paid in cubic metre excluding the finish.

6.5.1.6 LINTELS

All lintels spanning over independent openings unrelated to main RCC structure shall be measured under lintels, in cubic metre of the work done according to drawing. Width of the lintels shall be taken according to wall thickness specified unless set back or projected from wall as shown on the drawing. Unless otherwise described or shown on the drawings, bearing over the openings shall be depth of the lintel or 150 mm whichever is higher.

6.5.1.7 STAIRS

These shall be measured in cu.m. of the concrete work done as per drawing. Unless specified otherwise nothing extra shall be admissible for steps laid in any shape or not straight in plan.

6.5.1.8 FOLDED STAIRCASE



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The folded staircase shall be measured excluding the vertical main column. It shall be measured for step of any shape size and paid in cubic metre excluding the finish.

6.5.1.9 FINE AND LOUVERS

The RCC fine or louvers as provided shall be measured and paid cubic metre. Nothing extra shall be allowed due to its shape, location or size.

6.5.1.10 FACIA AND PARAPETS

These shall be measured in cu.m. of the concrete work down as per design, drawing, exclusive of finishing. For sills, all projection upto 100 mm beyond the wall on either side shall be made without any extra charge and these shall be inclusive of forming pattern of drip mould.

6.5.1.11 MULLIONS

The RCC mullions shall be measured in cubic metre. Nothing extra shall be admissible for its location, shape or size.

6.5.1.12 WATER TANK

These shall be measured in cu.m. of concrete work done for all the slab, walls etc. forming the water tank. Nothing extra shall be allowed for its shape, size and location. It shall be paid in cubic metre of the concrete work.

6.5.1.13 COLUMN FOOTINGS

These shall be measured in cu.m. of the concrete work done as per design, drawing. Unless specified otherwise, nothing extra shall be admissible for any particular shape of the footing.

7. REINFORCEMENT

7.1 INSTALLMENT OF REINFORCEMENT STEEL

Supplying and fixing tor steel reinforcement in RCC work including bending, binding with GI wire, placing in position including the cost of binding wire, as per drawing

Reinforcement shall be free from pitting due to corrosion, loose rust, mill scale, paint, oil, grease, adhering earth, or other materials that may impair the bond between the concrete and the reinforcement or that may in the opinion of the Employer/ Engineer cause corrosion of the reinforcement or disintegration of the concrete.

7.2 BAR REINFORCEMENT

Bar reinforcement described as "Deformed Steel" shall be hot rolled deformed bars and cold twisted, shall conform to NS 191-2046. The standard "TMT" bars shall mean thermo mechanically treated, conforming to NS 501-2058 / IS 1786. With respect to manufacture, quality, physical properties and related requirements, reinforcement of the fore-going



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descriptions shall comply with appropriate parts of IS Standards Nos. 432-1966, 1139-1966 and IS 1786-1966 for mild steel and tor steel respectively.

7.3 CERTIFICATES AND TESTS FOR REINFORCEMENT

For each consignment of bar reinforcement used in the works, the Contractor shall, if required, supply a certificate giving the ultimate strength, yield stress and elongation and the result of the cold bend test for each type and each size of bar. Tests for the purpose of obtaining the information shall conform to relevant I.S. specification.

The reinforcements supplied for which the Manufacturer's test sheets or other records are not available, or where in the opinion of the Employer/ Engineer has been subject to corrosion or other bad effects, the Employer/ Engineer shall select as many test pieces as he deems necessary, and the Contractor shall supply and deliver the test pieces free of cost without reimbursement and pay the cost of preparing and testing them as well. This test shall be performed in presence of the Employer/ Engineer.

7.4 DIMENSIONS OF REINFORCEMENT

The size of reinforcement bar described in the working drawings or elsewhere shall be the minimum and the rolling margin and other tolerances shall be wholly above this size. The length of a reinforcement bar shall not be less than the length on the drawing or elsewhere and shall not be more than 50 mm in excess of that length. Bar bending schedule shall be prepared by the Contractor and submitted for approval of the Employer/ Engineer. Such schedules shall be prepared based on reinforcement details, prior to the execution of the work. Nothing extra shall be paid for this.

7.5 BENDING REINFORCEMENT

Reinforcement bars shall be bent by approved means producing a gradual and even motion. Bars shall comply with the dimensions described in the drawings. Overall dimensions of bent or internal dimensions of bending or the like shall be within a tolerance of 30 mm. Any discrepancies or inaccuracies found by the Contractor in the drawings or other documents shall be immediately reported to the Employer/ Engineer whose interpretation and requirements relating thereto shall be accepted. The internal radius of bends shall be not less than twice the size of the bars unless described to the contrary on the bending lists or elsewhere in the drawing. Hooks and other anchorage bends for tor steel shall be bent to an internal radius of the twice diameter of the bar. This internal radius of the bends of corners of binders or stirrups or links shall be half.

7.6 FIXING REINFORCEMENT

Reinforcement shall be accurately fixed and by approved means maintained in the position described in the drawings. Bars intended to be in contact shall be securely wired together at all such points with 16 gauge soft iron tying wire. Binders, stirrups and links shall tightly embrace the bars with which they are intended to be in contact and shall be securely wired or, if approved, spot welded thereof.

Reinforcement shall be lapped, joined or spliced only at the positions described. Splices and the like found to be necessary elsewhere shall be formed only if and as instructed. Lapping shall be provided as shown in the drawing and as permitted. Where practicable bars in each



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member shall be assembled and fixed in the form of a rigid cage or skeleton before placing in the moulds or formwork. For this, all lapping bar on beams and slabs shall be scattered i.e. as far as possible minimum number of laps shall be permitted in one section of slab and only one lap will be permitted at one section in case of beams. In case of columns the lapping of bar shall be permitted only at the centre zone of column.

7.7 LAPPING LENGTH

- a) In case of beams and slabs, lapping length shall be 57 times dia.(57) of designed bar.
- b) In case of columns the lapping length shall be 45 times dia.(47) of the designed bar.

Immediately before concreting, the reinforcement shall be checked for position, cleanliness, freedom from rust or retarding liquid. Means shall be taken to ensure that reinforcement remains correctly in position with required cover during the placing and compacting of the concrete.

Reinforcement projecting from work being concreted or already concreted shall not be bent out or its correct position for any reason unless approved and shall be protected from deformation or other damage. Reinforcement left projecting for bending with future extensions shall be thoroughly coated with cement grout wash or encased in concrete or other-wise protected from corrosion as instructed.

7.8 COVER OF CONCRETE AND SPACING OF BARS

Unless otherwise described, the clear cover of concrete to the reinforcement shall be as follows:

7.8.1 Horizontal, Vertical or Inclined Slabs

15 mm or the size of the bars whichever is greater.

7.8.2 Lintels

20 mm or the size of the bar whichever is greater.

7.8.3 Beams

25 mm or the size of the main bars whichever is greater. Binders and the like 15 mm. minimum.

7.8.4 Columns

Cover for main bars for columns not exceeding 20 mm diameter shall be 35 mm and the main bars in columns exceeding 20 mm diameter shall be 40 mm or the size of the main bars whichever is greater, 15mm minimum for rectangular binders or links or helical binding.

7.9 CHAIRS AND SUPPORTS FOR REINFORCING BARS

Chairs of appropriate depth in suitable form shall be installed on all top bars in case of slab. The shape of chair shall be checked by the Employer/ Engineer. The spacing for slab top bar chairs will be such that during casting time, the reinforcement shall not get disturbed.



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7.10 CONCRETE CHAIR BLOCK FOR BOTTOM BARS

All bottom bar in slabs shall be raised as accordance with cover for concrete by means of small concrete blocks tied with binding wires. These blocks shall be placed at sufficient intervals during casting time, to maintain the cover for reinforcement.

In case of beams, the bottom blocks as well as side reinforcement shall be provided with concrete chair blocks so that the reinforcement shall not get disturbed during casting.

7.11 MEASUREMENT

For the purpose of ascertaining payments due to the Contractor the basis of measurements of bar or wire reinforcement used in the works shall be the calculated weight in kg which shall be computed from the sizes and lengths of the bars or wires described on the working drawings or elsewhere. No allowance in the weight shall be made for cutting to waste, rolling margin, extra length, lapping of bars or other tolerances. Nothing extra, whatsoever shall be admissible on bars 12 mm and below, rolled by the Contractor directly from the market on actual weight basis. The Contractor is deemed to have taken this factor into consideration and quoted his rate accordingly in the tender. The Contractor's rate for unit weight of bar reinforcement shall be deemed to include all allowances omitted in calculating the weight and for any other tolerances, and for providing tying wire, spacer bars, chairs and cover blocks as specified hereinafter for carriage and handling, for bending hooking, cranking, and for fixing and maintaining in the correct position in the works. Standard laps of the lengths as shown in the drawing or as instructed at site shall be admissible. Standard hooks (9 times the dia. for each hook for tor steel) shall be added to the finished length to arrive at the length of the bar for cutting and measurement. No hooks are required for ribbed or tor steel.

8. FORMWORK

8.1 CENTERING AND SHUTTERING

Centering and shuttering of plywood and steel formwork in slabs, walls, beams etc. including propping, strutting etc. and removal of forms including applying form oil to shuttering.

8.2 DESIGN

Formwork shall be designed and constructed for removal so that the concrete can be properly placed and thoroughly compacted. Formwork shall be firmly supported and adequately strutted, braced, or tied. It shall be capable of adjustment to the lines and dimensions of the finished concrete and it shall be sufficiently strong to resist without distortion, the pressure of concrete during its placing and compaction, and other loads to which it may be subjected. It shall not be liable to suffer distortion under the influence of the weather. When concrete is to be vibrated, special care shall be taken to ensure that the formwork will remain stable and the joints tight. The safety and adequacy of centering and shuttering shall be the sole responsibility of the Contractor. The Contractor shall if required supply to the Employer/ Engineer drawings and calculations for the formwork he proposes to use, for the concrete work.

8.3 MATERIAL FOR FORMWORK



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All surface of the formwork shall be of plywood or steel plate which shall give uniform concrete surface after removal. No wooden planks or other means of form work shall be acceptable. For struts and props the Contractor shall use sal wood 75mm x 100mm props or Iron lifting type strut over form base i.e. it shall not get depressed at the time of loading or casting. Any strut, if found defective shall be replaced as directed by Employer/ Engineer.

8.4 DEFLECTION AND CAMBER

The Contractor shall make allowance for any settlement or deflection of the formwork that is likely to arise during Construction, so that the hardened concrete conforms accurately to the specified line and level. The Contractor shall also make allowance in the formwork for any camber specified by the Employer/ Engineer to allow for the elastic deflection of structural members and deflection due to creep of the concrete. In the absence of any specified camber, the soffit of all beams and slabs shall be given a camber equal to 1/240 of the span length to ensure that the structure has the prescribed shape after removal of the forms.

8.5 SUPPORTS

Formwork shall be constructed so that the formwork to the sides of members can be removed without disturbing the soffit formwork or its supports. Props and supports shall be designed to allow the formwork to be adjusted accurately to line and level and to be erected and removed in an approved sequence without damage to the concrete. Supports shall be carried out which is sufficiently strong to afford the necessary support without damage to any portion of the structure. This may mean in some cases that it be carried down to the foundations or other suitable base. Props and bracing shall be provided for the temporary support of composite construction where separately specified.

8.6 JOINTS AND EDGES

All joints in the formwork shall be close-fitting to prevent leakage of cement slurry from the concrete. At construction joints, formwork shall be tightly secured against previously cast or hardened concrete to prevent the formation of stepping or ridges in the concrete. Formwork shall be constructed to provide straight and true angles, rises or edges. Where cambers are shown on the Drawings, the fillets shall be accurately cut to size to provide a smooth and continuous chamfer. Formwork panels shall have true edges to permit accurate alignment at sides and provide a clean line at construction joints in the concrete which shall be fixed with their joints either vertical or horizontal, unless otherwise specified.

8.7 SUNDRIES

Formwork shall be provided to the top surface of concrete where the slope or the nature of the work requires it. **Provision shall be made for forming holes and chases for services and for building in pipes, conduits and other fixings, as shown on the drawings or instruction of site Engineer.** The material and position of any ties passing through the concrete shall be as directed by the Employer/ Engineer. Except where corrosion of a metal tie is unimportant, it shall be possible to remove a tie so that no part of it remaining embedded in the concrete shall be nearer to the finished surface of the concrete than the specified thickness of cover to the reinforcement. Any holes left after the removal of ties shall be filled with concrete or mortar of approved mix.



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8.8 CLEANING AND TREATMENT OF FORMWORK

Spaces to be occupied by concrete shall be free from all rubbish, chipping, shavings, sawdust, dirt and tying wire etc., before concrete is placed. The formwork to be in contact with the concrete shall be cleaned and treated with suitable non-staining form oil or other approved material. Care shall be taken that oil or composition is kept away from contact with the reinforcement or with concrete at any construction joints. Surface retarding agents shall not be used except with the permission of the Employer/ Engineer. Formwork shall be thoroughly cleaned after each use. Damaged or distorted formwork shall not be used.

8.9 PAINTING ON FORMWORK

The concrete repellent painting on all contact surface of the formwork shall be of approved non bituminous colourless form oil so as to preserve the natural color of the concrete. The repellent compound shall be applied so as to effect quick removal of form work. It shall be applied as per the manufacture's direction. No compound shall be used which will adversely affect the concrete work or surface. No form repellent compound may be used without specific written approval of the Employer/ Engineer regarding type, manufactures, location and extent of use and application procedures.

8.10 REMOVAL OF FORMWORK

All formwork shall be removed without shock or vibration that might damage the concrete. Before the soffit and props are removed the surface of the concrete shall be exposed where necessary in order to ensure that the concrete has hardened sufficiently. In no circumstances shall formwork be struck of until the concrete reaches cube strength of at least three times the stress to which the concrete may be subjected at the time of striking. The formwork to vertical surfaces such as walls, columns and sides of beams may be removed after 24 hours in normal weather conditions although care must be taken to avoid damage to the concrete, especially to arises and features. In cold weather a longer period may be necessary before striking. Suitable curing methods should immediately follow the removal of the formwork. The following minimum times shall elapse before removal of formwork:

The times given for the removal of props are based on the assumption that the total live load plus dead weight to be supported at the time of removal is not more than one half the total design load. For horizontal members where the loading is a higher proportion of the total design load these times may need to be increased.

8.11 MEASUREMENT

Measurement for payment shall be done of the area on which centering shuttering has been done Rate shall include centering and shuttering including propping, strutting etc. and removal of forms including applying form oil to shuttering shall be measured in sqm.

9. BRICKWORK

9.1 BRICK MASONRY WORK

Chimney made brick work in foundation and plinths in cement mortar 1:4 (1cement: 4sand)



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9.1.1 BRICKS

The Brick shall be first class Chimney made bricks of quality approved by the Engineer's Representative and free from grit and other impurities such as lime, iron and other deleterious salts, conforming NS 1 2035 / IS code (latest revision). These shall be well burnt, sound, and hard with sharp edges and shall emit ringing sound when struck with a mallet. These shall be of uniform size.

The size of the bricks shall be 22.9cm x 11.2cm x 5.5cm unless otherwise specified, with a tolerance of ± 3 mm in each direction. The compressive strength should be 3.5N/mm². The bricks shall be provided with frogs. All bricks which absorb water more than one-sixth of their own dry weight after being soaked for one hour by immersion in water shall be rejected.

9.1.2 BRICK BATS

Brick bats shall be well burnt and shall be obtained only from the bricks specified under 9.1.1. above.

9.1.3 MORTARS

All brick work shall be laid with specified mortar of good workable consistency.

Cement mortar shall be prepared by mixing cement and sand in the specified proportions the mixing shall be done in a mechanical mixer or by hand mixing as directed by Employer/ Engineer. Water shall be added as required during mixing. Care shall be taken not to add more water than what is actually needed to bring the mortar to the consistency of a stiff paste. Only the quantity of mortar, which can be used within 2 hours of its mixing shall be prepared at a time. Mortar unused for more than 2 hours shall be rejected and removed from the site of work.

9.2 WORKMANSHIP

9.2.1 SOAKING OF BRICKS

All bricks required for masonry in cement mortars shall be thoroughly soaked in clean water for at least one hour in tanks of sufficient size immediately before use. The cessation of bubbles when the bricks are immersed in water is an indication of through soaking of bricks.

9.2.2 LAYING

- a) Bricks shall be laid in English bond, unless otherwise specified. Half or cut bricks shall not be used except where necessary to complete the bond. Closer in such cases shall be cut to the required size and used near the ends of the walls.
- b) The walls shall be taken up truly plumb. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. Vertical joints in alternate courses shall come directly one over the other. The thickness of brick courses shall be kept uniform and for this purpose straight edge with graduations showing the thickness of each brick course including joint shall be used. Bricks shall be laid with frogs upwards.
- c) The walls of a structure shall be carried up regularly and nearly at one level and no portion of the work shall be left more than 3 ft. below the rest of the work. Where this is



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not possible, the work shall be raked back according to bond (and not left toothed) at an angle not exceeding 45 degree.

- d) All iron fixtures, pipes, outlets of water, hold fasts of doors and windows, etc. which are required to be built in walls, shall be embedded in cement mortar or in cement concrete bed as specified, in their correct positions as the work proceeds. Nothing extra shall be paid for such extra cement mortar or cement concrete to be used for embedding the fixtures of the nature stated above.

9.2.3 JOINTS

Bricks shall be so laid that joints are quite full of mortar. The thickness of the bed joints shall in no case exceed 10 mm unless otherwise specified. The face of joints shall be raked to a minimum depth of 10 mm by raking tool daily during the progress of work when the mortar is still green, so as to provide proper key for the plaster or pointing to be done. Where plastering or pointing is not required to be done, the joints shall be struck flush and finished at the time of laying. The face of brick work shall be cleaned daily and all mortar drippings removed.

9.2.4 BRICK-ON-EDGE COPING

The top course of all plinths, parapets, steps and tops of walls below R.C.C. slabs or beams shall be laid with brick on edge, unless otherwise specified. Proper care shall be taken that the bricks forming the top corners and ends of walls shall be properly radiated and keyed into position.

9.2.5 CURING

Green work shall be protected from rain by suitable covering. Brick masonry with cement mortar shall be kept constantly moist on all faces for a minimum period of 7(seven) days.

9.2.6 MEASUREMENTS

The measurement of brickwork both 230mm (above 230mm, if any) and 115mm thick shall be product of the length, height and thickness i.e. **in cubic meter** for chimney made and fair faced machine made brickwork. Deductions for doors, windows and other openings including lintels shall be made to arrive at the net quantity of work. Nothing shall be paid extra for forming such openings. However, no deductions shall be made for areas less than 0.1 sq.m. overall, bearing of lintels, beams, girders and holdfast blocks but nothing extra like formwork shall be paid for embedding these. Unless otherwise specified nothing extra shall be admissible for cutting in brickwork or brick to suit RCC structures, walls in any shape other than straight or any cutting necessary for shaping the walls to the structural design. Rate shall be inclusive of all necessary scaffolding, watering, cutting of bricks, curing, materials and labour.

9.3 BRICK WORK IN SUPERSTRUCTURE

Chimney made first class brick work in super structure in cement mortar 1:4 (1 cement: 4 sand)

All the works shall be done as per specification in clause. 9.1.



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9.3.1 SCAFFOLDING

Double scaffolding having two sets of vertical supports shall be provided. The supports shall be sound and strong, tied together with horizontal pieces over which the scaffolding planks shall be fixed. In buildings upto two stories, single scaffolding shall be allowed. In this case, the inner end of the horizontal scaffolding pole shall rest in a hole provided in the header course only. Only one header for each pole shall be left out. The holes left in masonry work for supporting the scaffolding shall be filled and made good, before plastering. The contractor shall be responsible for providing and maintaining sufficiently strong scaffolding so as to withstand all loads likely to come upon it.

9.3.2 MEASUREMENT

It shall be done as specified above inclusive of scaffolding.

9.5 BRICK ON EDGE/ STONE SOLING

For that brick soling, the brick shall be Chimney made and will be laid as directed by the Employer/ Engineer.

The brick shall conform to as per clause 9.1.1. The base on which is to be laid on edge shall be levelled or sloped as required and compacted properly. The bricks shall be laid on edge true to line, slope and pattern as required. The line, level etc. shall be checked by pegging. The brick shall be closely packed to each other as far as practical and the gaps shall be filled with sand for compaction. The workmanship shall be to the approval of the Employer/ Engineer.

For Stone Soling, the stone shall be free from dirt and dust and will be laid as directed by the Employer/ Engineer.

9.5.1 MEASUREMENT

The measurement shall be the net area of length and breadth of the work done and the rate shall be for all the material and labour.

10.1 STONE WORK

10.1.1 STONE WORK IN FOUNDATION AND IN SUPERSTRUCTURE

All stone work shall be made with random rubble stone from the best quarry and built in 1:4 cement mortar (1 cement: 4 sand).The stones must be approved by the Employer/Engineer before using in the construction work.

The stone shall be hard, tough sound and durable. No stone shall be less than 6" and more than 18". Face stone should be comparatively larger and uniform in size and colour to with a good appearance. Breadth of face stone should be greater than height. All the stones shall be wetted thoroughly before laying.

The joints should not be thicker than 3/4". Face joint should be thinner. No pointing shall be allowed afterwards. In the corners, the stones should be chiselled at both sides and also on the top of the stone walls where the wall is ending and such surfaces being built up. Not more than 2 feet height of masonry shall be constructed at one time.



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10.1.2 MEASUREMENT

The measurement of work shall be the product of length, height and thickness. All the thickness of stone shall be measured and will be as per drawing.

11 DOORS AND WINDOWS**11.1.0 ALUMINIUM WINDOWS/VENTILATION**

For Store House Building all windows/ventilations are proposed to be constructed by aluminium. Sliding type Aluminium windows are of section (101 x45 x1.5) mm with ventilation and mosquito net .Thickness of glass used on windows should be 5mm. The colour of aluminium frame shall be dark brown. Shop drawing of window shutter shall be prepared and submitted to the employer for approval.

It shall be measured in net area of overall window/ventilation in sqm and rate includes all material, accessories and labour cost.

11.1.1 TIMBER

Wherever Timber is to be used it shall be from the heart of a sound tree of mature growth, the sapwood being entirely removed. It shall be uniform in substance, straight in fibre, free from large, loose, dead or cluster knots, flaws, shakes, wasp, cup spring, twist, bends and defects of any kind. It should be free from spongy, brittle, flaky or brushy condition, sapwood and barer holes.

All timber shall be seasoned and be free from decay, rot, harmful fungi and insect attacks and from any other damage of harmful nature which will affect the strength, durability, appearance or its usefulness for the purpose for which it is required. The timber shall be of best quality timber as specified. The samples of the approved timber to be used shall be kept in the office of the Employer/ Engineer for the purpose of comparison.

The colour shall be uniform as far as possible, the darkness of colour amongst colour species of timber being generally a sign of strength and durability. The moisture content for timber shall not exceed 12 percent of dry weight of timber. As soon as the foundation of buildings are laid all necessary timber scantlings shall be brought to site and stacked and kept under cover and allowed to remain till required.

Timbers for the work shall not be brought to site of work until inspected and approved by the Employer/ Engineer who may reject the defective timber/timber works. Any effort like plugging, painting, using any adhesives or resinous materials to hide defects shall render the pieces rejectable by the Employer/ Engineer. Timber presented for inspection shall be clean and free from dust, mud, paint or other material which may conceal the defects. Cut off ends for protection can be done after inspection with raw linseed oil or any other materials approved by the Employer/ Engineer. No timber be painted, tarred or oiled primed without the previous approval of the Employer/ Engineer.

All scantlings shall be sawn in straight lines, planes and of uniform thickness with full measurement from end to end and shall be sawn in the direction of the grain. They shall be sawn with such sufficient margin as to secure specified dimensions, lines and planes after being brought and dressed. Any timber rejected shall at once be removed from the site of work.



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11.1.2 WORKMANSHIP

The joints shall be simple, neat and strong. Framed joints shall be coated with white lead before the frames are put together. All mortise and tendon joints shall fit in fully and accurately without wedging or filling. The joints shall be pinned with hard wood or bamboo pins of 3/8" to 1/2" diameter, after the frames are put together and pressed in position by means of a press. Joints in the frame vertical stile or horizontal rail shall not be allowed. The unrelated edges of the frame in the opening shall be rounded or beaded uniformly. When ventilator is provided above the door, full length of the vertical post shall be provided.

The rebate and the plaster key grooves shall be provided as shown in the drawing. Vertical part of the frame shall be embedded at least 30 mm. in the masonry or concrete or flooring. Holdfasts shall be provided as specified and any adjustment of spacing necessary shall be erected in position and held in plumb with proper supports from both sides and built in masonry as it is being built.

The work shall be carried out as per the drawing. Timber shall be properly planed wrought and dressed in a workmanlike manner. Joints shall be true to fit properly and as directed by the Employer/ Engineer. The rate of woodwork shall include the cost of all sawing, planning, jointing, framing, labour and materials for raising and fixing and all workmanship and the fitting, fixing and supplying of all straps, bolts, nails, spikes, keys wedges, pins, screws etc. necessary for the framing and fixing. Joints and portions inserted in masonry or floor shall be allowed for in the measurement. Plugging in of holes for holdfasts shall be done in neat manner. Any defects observed after installation shall be rejected. Sample of workmanship shall be submitted for approval.

Holdfasts shall be of 20mm x 6mm x 300mm long mild steel (M.S.) flat one end split and fish tailed at another end for anchorage into cement concrete blocks 1:2:4 (1 cement: 2 sand: 4 stone aggregate 20mm and down gauge) and the flat end is bent up for fixing to the frame with three screws. The holdfasts shall be as shown on the drawings. Holdfasts shall be fixed to the door or window frames with 40mm M.S. screw. The M.S. flat of the holdfast shall be fitted to the frame in the recess of required size and thickness. There shall be 2 such holdfasts on each side of the frame for frames upto 1.25 m height (four in all) and 3 on each side of the frame above 1.25 m (six in all). The positions of the holdfasts shall be as shown on the drawings with minor adjustments for brick/stone masonry. It shall be fixed as the work proceeds.

The mild steel holdfast for RCC columns shall be made of 12mm diameter rod fish tailed at one end and threaded at the other. The split length shall be 25 mm and threading shall be at least 50 mm where a nut for 12 mm dia. shall be provided. It shall be total 175 mm long. The M.S. bolt holdfast as shown in the drawing shall be provided in the RCC column structure at required places as the casting progresses.

The timber frame shall be fitted with M.S. bolt holdfast through square holes provided at required places in the frame. The nut shall then be tightened properly. Care shall be taken that the threaded bolt is at least 12mm inside exposed frame face. Plugging of the bolt hole in the frame shall be done with timber matching the graining of the timber. The finished surface shall be smooth and matching after plugging the bolt hole. All door, window and ventilator embedded or in contact with masonry or concrete works shall be coated with two coats of bitumen emulsion or solignum. Care shall be taken that such preservatives not drip on the dressed faces.



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11.1.3 MEASUREMENT

The measurement of the timber frame shall be taken in its net length and section and worked out correct upto two places of decimals in cubic metre. Total tolerance of 3mm is admissible in sections of dressed timber. This shall include M.S. holdfast of 20mmx 6mmx 300mm size embedded on PCC bed 1:3:6 or 12mm dia. holdfast to RCC column.
The measurement of upvc windows and ventilations wherever installed shall be measured in square meters.

11.2 WOODEN DOOR SHUTTERS

P/F in position 40mm thick sal timber (Agrakh) door shutter single or double leaf fixed with 3 nos. of 150 mm brass butt hinges to each shutter.

- a) Fully panelled decorative door shutter as per drawing.
- b) Flyer mesh door shutter with 50 mm. mesh expanded metal
- c) Fully teak plywood faces flush door shutter as per BoQ.

11.2.1 TIMBER

Timber as per clause 11.1.1.

11.2.2 PANELED SHUTTER

The shutter may be paneled single or double leaf which shall be as per drawing or the direction of the Employer/ Engineer. The styles shall be continuous from top to bottom. The top, frieze, muntins or mullions shall be jointed to the styles and their muntins shall be jointed to the rail. The thickness of the frame shall be 40 mm. and widths shall be as shown in the drawing or as directed by the Employer/Engineer. The timber panels shall be 12 mm. thick or as instructed by the Employer/ Engineer. 20 mm. deep groove shall be made on all the inside faces of the frame to receive panels. Before fixing the panels in the grooves of styles, rails etc paste of white zinc shall be treated on the panel for proper adhesion.

All junctions of styles to rails or to muntinsetc shall be treated with white zinc before fixing to the shutter frame work. 3 nos. of 150 mm steel or brass butt hinges shall be fixed with screws at proper places as shown on drawing or directed by the Employer/ Engineer. The finished shutter shall be dressed and smoothly finished.

11.2.3 LOUVERS

The timber louvers shall be 12 mm thick of the size and fixing as shown in the drawing. Vertical slats if required shall be provided as per instruction of the Employer/ Engineer.

11.2.4 CONSTRUCTION

The item shall be carried out in conformity with IS 1003 Part I-1966 for door shutters. Construction and workmanship finished dimension of the components being entirely as per clause there in and as shown in the drawing. When ventilator is included it shall be provided by having full length one piece posts for door or window and ventilator extending the frame on the top to the head to the required extent. The shutters shall be of finished dimensions with ornamental mouldings and glaze and other components as specified in the drawings or as



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directed by the Employer/ Engineer for the particular type but adjusted for the absence of rebates in the frames and shutters by reducing the glaze. The clearance between the finished shutter and the door frame and between the shutters themselves shall not exceed 3 mm unless otherwise specified in the drawing. The fixing and size of the hinge shall be as specified by cutting the necessary recess corresponding to the thickness of the flaps in the sides of the shutter style and the door frame.

11.2.5 MEASUREMENT

The measurement of the door shutter shall be taken in its net area of full length and breadth from rebates. Tolerance in size shall be 6 mm and 3 mm in thickness. Overlaps of two shutters shall not be measured. The rate shall be for complete work including hanging and fixing in position. The rate shall include cost of materials and labour.

11.3 WINDOWS SHUTTERS

Mentioned as above in Aluminium window.

11.3.1 WORKMANSHIP

The workmanship shall be of best quality finished smooth correct to size. The wire mesh shall be tightly stretched during fixing. Sample of workmanship shall be approved prior to execution of work.

11.3.2 MEASUREMENT

It shall be measured in square metre of the shutters including all accessories. The rate shall include cost of material and labour complete. Nothing extra shall be paid for double leaf shutter overlap etc.

11.4 SOLID CORE DOOR SHUTTERS

P/F in position 40 mm thick factory made solid core flush door shutters single or double leaf fixed with 3 nos. of 150 mm brass but hinges to each shutter.

- a) Shutter made of 4mm. thick teak plywood on both faces of shutter with shutter frames and core as specified and shown in the drawing..

11.4.1 SHUTTERS

The shutters shall conform to the relevant specification for the type and grade to IS 2202-1973. The flush door shutters as specified shall be manufactured by a reputed factory such as The Indian Plywood Manufacturing Co. Ltd., Bombay or equivalent having hot press and all modern equipment. Samples shall be produced for the approval of the Employer/ Engineer.

11.4.2 CONSTRUCTION

The lapping of frame (style and rail) shall be 50 mm wide of required thickness. There shall be three numbers of horizontal wooden spacers of 100 mm width with one in middle, lock block of 50 mm width shall be provided vertically on both sides between the wooden spacers. Wooden batten shall also be provided. The shutter shall be as per the drawing.



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11.4.3 TIMBER

The shutter frames shall be of Sal wood, Sissum or Agrakh or any other hard wood variety of approved quality.

11.4.4 PLYWOOD

It shall be commercial plywood quality for commercial play shutter facing and shall be teak wood play of matching veneers for the teak ply face, as approved by the Employer/ Engineer.

11.4.5 BENDING MEDIUM

Liquid phenol formaldehyde synthetic resin shall be the bending medium.

11.4.6 FINISH

There shall be no clear joint/junction of the plywood on the finish side. Chipped ply, cracked or other defective workmanship shall be rejected. The door shutters shall be hung in position with 3 nos. 150 mm M.S. butt hinges.

11.4.7 MEASUREMENT

It shall be measured in net area of overall shutter. The rate shall be inclusive of providing and fixing the shutter with 3 nos. of hinges per shutter leaf.

12. GLASS AT DOORS AND WINDOWS

P/F glass in door, clerestory, window ventilator shutter with putty or putty and timber bead as shown in the drawing.

- a) Clear glass 5mm thick.
- b) Tinted glass 5mm thick.
- c) Wired glass 5mm thick.
- d) Frosted glass 5mm thick.
- e) Patterned glass 5mm thick.

12.1 MATERIALS

12.1.1 GLASS

All glass shall be of the best quality, free from specks, bubbles, smokes, veins, air holes, blisters and other defects. The kind of glass supplied by the Contractor shall be as mentioned in the item or in the special provisions or as shown on the detailed drawings. The thickness of glass panes shall be uniform. The specifications for different kinds of glasses shall be as under:

12.1.1.1 SHEET GLASS

This shall be patent float sheet glass of the best quality, weighing 7.5 kg. persq.mupto 60cm x 60cm panes. For panes larger than 60cm x 60cm and up to 80cm x 80cm the glass weighing



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not less than 8.75 kg/sq.m shall be used. For bigger panes upto 90cm x 90cm glass weighing not less than 1125 kg./sq.m shall be used. Sheet glass for glazing and framing purposes shall conform to IS 1761:1960. Sheet glass of the specified colours shall be used if so shown on the detailed drawings or specified in special provisions. For important buildings and for panes with dimension of over 90cm. plate glass of specified thickness shall be used.

12.1.1.2 FLOAT GLASS

When float glass is specified, it shall be "polished patent float glass" of the best quality, it shall have both surface ground flat and parallel and polished to obtain clear undistorted vision and reflection. The plate shall be of the thickness mentioned in the item, shown in the detailed drawings or specified in the special provisions. In the absence of any specified thickness, the thickness of plate glass to be supplied shall be 6mm. A tolerance of 0.50 to 0.80mm shall be admissible on the nominal thickness of polished plate glass.

12.1.1.3 OBSCURED GLASS

This type of glass transmits light so that the vision is partially or almost completely obscure. Principal types are plain rolled or doubles rolled, figured, rolled ribbed, fluted frosted glass on one or both sides and rough cast. The thickness and type shall be as mentioned in the item or special provisions or detailed drawings. The ribbed or fluted type of glass shall be used when more diffused types of obscured glass. The thickness and type of glass shall be as detailed on drawings or as specified in the special provisions and as directed by the Employer/ Engineer.

12.1.1.4 WIRED GLASS

In this type of glass, wire netting is embedded in a sheet or plate glass. Wire mesh is inserted during rolling. Electrically welded 13mm Georgian square mesh or 22mm hexagonal mesh is used. The thickness of glass shall not be less than 6mm. Two varieties are:

- 1 Cast wired which is a transparent wired glass and
2. Polished wired which is a transparent wired glass with both surfaces ground and polished.

12.1.1.5 GLASS BLOCKS

These may also be called glass bricks. These are used in glass brick panels. These are hollow glass blocks formed by fusing together two halves of pressed glass and partially evacuated. The sizes of the bricks shall be shown on the drawings or as specified in the special provisions. The glass bricks shall be of approved make like those of Pilkington. Ribs, flutes or prisms shall be cast on one or both of the blocks if specified in the special provisions for obscuring the glass and to diffuse lights.

12.1.2 PUTTY

The putty to be used for fixing the glass in wooden frames shall conform to IS 419-1967. The putty may be coloured to suit the colour of door or window etc. For glazing in metal sashes putty to be used shall conform to IS 420-1953. Putty shall be composed of best quality whiting mixed with double boiled linseed oil, properly kneaded to workable consistency.

12.1.3 MASTIC



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For glazing in metal sashes, patent mastic shall be used instead of putty, when so specified in the special provisions or directed by the Employer/ Engineer. Glass bricks shall be laid in mastic specified by the manufacturers of glass blocks or in 1:3 cement mortar if so specified in the special provisions.

If the glazier's work is an independent item of work or forms a sub-item combined with any other item of work, the glazing rate shall include the following

- a) Providing the specified type of glass panes of the required dimensions and fixing material.
- b) Fixing the glass in the frame as specified, including cutting and waste.
- c) Cleaning the glazed work,
- d) Repairing of any work damaged during,
- e) All labour, material, scaffolding and equipment to carry out the item.

12.1.4 WORKMANSHIP

All glass shall be cut to size accurately to suit all openings to be glazed with a slight margin of about 1.5mm. on all sides as directed, shall be fixed by means of T.W. beads to wooden and steel windows and by metal spring clips to metal windows and by Rubber/ P.V.C. fillet in aluminium windows.

12.1.5 WOODEN FRAMES AND SASHES

The glass panes shall be properly cut to fit the rebates of the frames and sashes truly with a slight minus margin of about 1.5 mm. on all sides. The rebates should not be less than 8 mm. in the frames and sashes. Before glazing, the frames shall be primed and prepared for painting so that the wood may not draw oil out of the putty and the putty may adhere properly. The rebate shall be puttied first and glass pane is then pressed into position and secured with glazier's springs and firmly back puttied. The rebates shall be neatly chamfered. The putty may be given a coat of oil paint or oil to match the side surface and also seal the edges of the putty to the glass. The putty shall be left for a week or so before painting to ensure its setting.

When so specified, for better class of work and larger panes of glass, the glass shall be bedded in putty and fitted to the frames with wooden beads or mouldings and secured with brass screws and cups. For fixing plate glass or large sheets of glass, the glass shall be embedded in putty externally, but internally, wash leather, valvet, felt, rubber or some similar material approved by the Employer/ Engineer shall be used before fixing the beads.

Where dry glazing is specified, the glass shall be held in place by moulded wooden fillets fixed with brass screws, round the end of the glass and between it and wooden fillets, a piece of chamois or wash leather shall be inserted to act as a cushion.

The mode of fixing shall be specified in the special provision. If not so specified, panes up to 0.25 sq.m shall be fixed without edge and larger panes shall be fixed with the use of wooden beads. Unless otherwise specified, all plate glass exceeding 0.5 sq.m in area shall be fixed with the use of wash leather, felt, valvet, etc., and beads.

No glazing shall be considered complete until all stains have been removed from the surface of glass and wood work or metal frame.



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The Contractor shall make good any glass broken by his work people while fixing or cleaning. All doors and windows shall be cleaned, all damaged putty or glazing shall be repaired and the whole left perfect on the completion of the work.

If glazier works is not combined with any other item of work, and is to be paid independently, the Contract rate shall be per square metre of glazed area fixed and completed in all respects. The panes shall be measured from rebate to rebate. Each pane of glass shall be measured to the nearest 0.5cm both in width and height. The curved or irregularly shaped pieces shall be measured net. The area of each pane shall be worked out correct up to 2 places of decimals of a square metre and the areas of each class of blazing shall be worked out separately.

When glazing is included in a composite item of glazing and framework, no separate measurements for glazier's work shall be made. The composite item for glazing and frame work will be paid for separately at an inclusive rate.

13. DOOR AND WINDOWS ACCESSORIES

P/F in position fixtures and fastenings in the door, window, clerestory window and ventilator shutters as per specification and drawings.

- a) Mortice lock chromium plated.
- b) Tower bolt 230 mm. 7 levers .
- c) Tower bolt 150 mm. brass.
- d) Door spacing 230 mm. brass.
- e) Door stopper rubber type chromium plated.
- f) Handle 150 mm. brass .
- g) Handle 100mm brass.
- h) Tower bolt 230 aluminium.
- i) Tower bolt 150mm aluminium .
- j) Handle 150 mm aluminium.
- k) Handle 100 mm aluminium .
- l) Eye and hook 230mm. brass.

All fixtures and fastenings to be used shall be approved by the Employer/ Engineer and shall be fixed as per drawing. They shall be new, sound and strong of best quality and workmanship. The size shape, design and finish shall be as shown on drawings or directed by the Employer/ Engineer. Samples shall be submitted for approval and the approved samples shall be kept in the office of the Employer/ Engineer for comparison.

All fixtures shall be fixed to the jointing in a secure and efficient manner. Any of the fixtures damaged during fixing shall be removed and new ones fixed in their place and the surface of the joinery made good where affected at the Contractor's expense. When the type is not mentioned on the drawing or items, it shall be as directed by the Employer/ Engineer. The fastenings and fixtures shall be provided as per the fastenings and fixtures shall be provided as per the fastenings and fixture schedule. A pair of 230mm long hooks and eyes shall be fixed to the ventilator frame and the shutter as directed. If the drawings specify different types of fixtures the work shall be carried out according to the drawing.

If the ventilator is of swing type then hooks and eyes can be dispensed with. The ventilator shall swing about a central horizontal axis on a pair of such centres, chat hooks, one brass ring with screws attached as per drawings or as directed by the Employer/ Engineer and a good



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quality of window hemp cord of adequate length for convenient operation of the ventilator shall be provided. A two pronged brass hook shall be embedded in the wall at the height above floor level for tying the cord. All the fixtures shall be fixed as shown on the drawings or as directed by the Employer/ Engineer. The fixture and fastenings shall be fitted prior to the application of finishes, removed during the finishing operation and reset after completion of the finish. Metal knobs and handles shall be protected by wrappers of the tough paper or cloth and maintained in place till acceptance of the work. Upon completion of the work, the Contractor shall in the presence of the Employer/Engineer show that all the fixtures and fastening work freely.

13.1 MEASUREMENT

It shall be measured in number of fixtures and fastening provided. Rate shall include cost of material and labours required per item of work if mentioned.

13.2 METAL GRILLS FOR PROTECTION

3 x 20 mm metal iron flats shall be used in each windows as required at site. The metal shall be rust free, fresh and coloured with metal enamel over metal primer, whose colour choice shall be done by the representative of employer.

Its payment shall be made similar to windows quantity viz square meters.

14 FLOORING

14.1 CEMENT SCRREDDING/PUNNING

Providing and laying 3mm neat cement punning on floor, with 38mm screed of specified ratio including wetting the surface, mixing, laying and rubbing with steel trowel to a hard smooth and shining surface and curing.

15.1.1 WORKMANSHIP

The base surface shall be properly watered and cleaned of dust and dirt. A screed of cement/sand in the specified ratio shall be laid over it. Upon which punning shall be done. Before applying cement sand punning, the first coat should be swept clean of any dust or loose particles. The average thickness of punning shall not be less than 3mm. The pattern of the surface should be as per instruction of the Employer/ Engineer. The coat shall be finished by rubbing with a steel trowel and any depression shall be filled in and rubbed to a shining surface. All corners and edges shall be rounded. The Contractor shall prepare a sample square metre of the punning as per instruction of the Employer/ Engineer until the quality, texture and finish required is obtained and approved by the Employer/ Engineer, after which all punning executed, shall conform to the respective approved sample. All punning shall be finished smooth, even and truly level and as per instructions of the Employer/ Engineer. The punning shall be kept wet for 7 days.

15.3.2 MEASUREMENT

The measurement shall be taken in square metre for the finished surface. The rate shall include all the materials and labour.

16. FINISHING:



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16.1 PLASTERING WORKS

16.1.1 CEMENT SAND PLASTERING ON WALLS IN CEMENT SAND (C/S) MORTAR (1:4)

16.1.1.1 SCAFFOLDING

For plastering work on walls, unless otherwise specified, double scaffolding having two sets of vertical supports shall be provided. The Contractor shall be responsible for providing and maintaining sufficiently strong scaffolding so as to withstand all loads likely to come upon it.

16.1.1.2 MORTAR

The type of mortar mix to be used shall be as specified in the description of the item.

16.1.1.3 WORKMANSHIP

All joints in the masonry shall be raked out properly to a minimum depth of 1/2". Dust and mortar shall be brushed out. The surface shall then be thoroughly washed with water, cleaned and kept wet before plastering is commenced. The thickness of the plaster shall be as specified. The plaster may be applied in 1, 2 or 3 coats as specified or as directed by the Employer/Engineer, but no single coat shall exceed 1/2" thickness.

Ceiling plaster shall be completed before the commencement of wall plaster. All wall plaster shall be started from the top and work down towards floor.

Gauges of plaster 6" x 6" shall be first applied horizontally and vertically, at not more than 6 ft. intervals over the entire surface to serve as guides for plastering and to ensure even thickness and a true surface. The surfaces of these gauged areas shall be truly in the plane of the finished plaster surface. The surface shall be finally given the type of finish as specified in the description of the item or as directed by the Employer/Engineer. All corners, arises, angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Rounding or chamfering corners, arises, junctions etc. where required shall be done without any extra payment.

In suspending work at the end of the day, the plaster shall be left, cut clean to line both horizontally and vertically. The work shall be closed on the body of wall and not nearer than 6" to any corners on arises. When recommencing, the edge of the old work shall be scraped clean and wetted before plaster is applied to the adjacent areas.

Curing shall be started 24 hours after finishing the plaster. The plaster shall be kept wet for a minimum period of 7 days. The dates of plaster shall be legibly marked on the various sections of the wall so that curing for the specified period thereafter can be watched. Any cracks which appear in the surface and all portions, which sound hollow when tapped or are found to be soft or otherwise defective, shall be cut out in rectangular shape and redone as directed by the Employer/Engineer.

16.1.1.4 MEASUREMENT



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It shall be done in square metre of the surface over which the plaster has been done. The thickness of the plaster shall not be taken into account except for independent columns where the measurement shall be of finished surface allowing 12mm over the designed dimensions. Opening shall be deducted in full, and jambs and soffits shall be allowed. Openings less than 1 sq.m shall not be deducted and nothing extra shall be paid for finishing jambs, soffits and the sides of such openings. Unless otherwise specified, nothing extra shall be allowed for plaster on independent columns and beams, short with or on curved surface.

16.1.2 CEMENT SAND PLASTERING ON CEILING IN CEMENT SAND (C/S) MORTAR (1:3)

16.1.2.1 SCAFFOLDING

Stage scaffolding independent of the walls shall be provided for all ceiling plaster.

16.1.2.2 MORTAR

The mix of mortar to be used shall be as specified in the description of the item.

16.1.2.3 WORKMANSHIP

Projecting burns of mortar formed due to the gaps at joints in shuttering shall be removed. The surface shall be scrubbed clean with wire brushes. In addition, concrete surfaces shall be pack marked with a pointed tool at spacing of not more than 2" centres to ensure proper key for the plaster. The surface shall then be cleaned of all oil, grease, etc. and well wetted before the plaster is applied. The thickness of the ceiling plaster shall be 1/4" to 1/2" unless otherwise specified. The plaster may be applied in one or two coats as specified.

Ceiling plaster shall commence only after the slab above has been finished and the centering removed. In the case of ceiling of roof slabs, plaster shall commence only after the terrace work has been completed. Gauges of plaster 6" x 6" shall be first applied at not more than 5ft. intervals in both directions to serve as guides for the plastering and to ensure even thickness and a true surface. The surfaces of these gauged areas shall be truly in the plane of the finished plaster surface.

The surface shall be finally given a smooth finish, unless otherwise specified, when the work is in progress all horizontal lines and surfaces shall be frequently tested for their accuracy. Curing shall be started 24 hours after finishing the plaster and shall be continued for a minimum period of 7 days. The dates of plaster shall be marked so that curing for the specified period thereafter can be watched.

Any cracks which appear in the surface and all portions, which sound hallow when tapped or are found to be soft or otherwise defective, shall be cut out in rectangular shape and remedied as directed by the Employer/ Engineer.

16.1.2.4 MEASUREMENT

Measurement shall be done in square metre of the surface over which the plaster has been done. The rate shall include materials and labour etc.



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16.2 PAINTING

16.2.1 GENERAL

All paints shall be approved by the Employer/ Engineer, ready mixed paints as received from the manufacturer without any admixture shall be used. If thinner is necessary in the case of ready mixed paints, the same shall be recommended by the manufacturers.

The Contractor shall bring all the approved paints to the site of work in their original containers in sealed condition. Paints which will be sufficient for the entire work or at least for a fortnight's work shall be brought in at a time. The empties shall be removed from the site only when the item of work has been completed and permission obtained from the Employer/ Engineer. Painting shall be started only when the Employer/ Engineer has inspected the items of work to be painted, satisfied himself about their proper quality and given his approval to commence the painting work. Painting, except the priming coat, shall be taken in hand only after all other builder's work is practically completed. The rooms shall be thoroughly swiped out and the entire building cleaned up at least one day in advance of the paint work being started.

The surface to be painted shall be thoroughly cleaned and dusted. All rust, dirt, scales, grease etc. shall be removed before painting is started. The prepared surface shall be approved by the Employer/ Engineer before painting work can commence.

The painting shall be thoroughly stirred in their original containers before pouring them into smaller tins for use. While applying also, the paint shall be continuously stirred in the smaller tins so that the consistency is kept uniform. If required, a thinner shall be used to bring the paint to the required consistency. Two or more coats of painting shall be done either with brushes or by spraying as stipulated in the item of work.

Each coat shall be allowed to dry out thoroughly before the next coat is applied. Each coat except the last coat, shall be thoroughly rubbed down with sand paper or fine pumic stone and cleaned of dust before the next coat is applied. The finished surface shall present a smooth and even surface without any hair marks from the brush or clogging of paint puddles. While painting doors and windows, the putty round the glass panes shall also be painted and care being taken to see that no paint stains etc. are left on the glass. Tops of shutters and other similar hidden locations shall not be left out in painting.

All painting work shall be measured in sq.m unless otherwise specified. In measuring painting of joinery and steel work, etc. the co-efficients as given in IS:1200-1964 shall be used to obtain the areas payable. Unless otherwise specified in the description of the item. All furniture, fixtures, glazing, floors etc. shall be protected by covering and stains, smears, splashing if any shall be removed and any damage done shall be made good by the Contractor at his own cost. The rate shall include the cost of all labour and materials involved in all the operations described above and any other specifications given under the relevant it.

16.4.2 PRIMING COAT

The priming coat shall be as specified in the description of the item. The primer shall be prepared at site or ready-made paint of approved brand and manufacture. At site, the primer for wood work shall be prepared from a mixture of red lead, white lead and double boiled linseed



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oil primer or cement primer of approved make. The surface shall be prepared to receive priming coat as follows:

16.4.2.1 WOOD WORK

The surface to be painted shall be dry and free from moisture. All unevenness shall be rubbed down smooth with sand paper and shall be well dusted, knots, if any shall be covered with a preparation of red lead made by grinding red lead in water and mixing with strong glue size and used hot. The surface treated for knotting shall be dry before the primer is applied. After the priming coat is applied, the holes etc. on the surface shall be stopped with putty or wood putty. Stopping shall not be done before the priming coat is applied as the wood will absorb the oil in the stopping and the later is therefore liable to crack.

16.4.2.2 IRON AND STEEL WORK

All rust and scales be removed by scraping or by brushing with steel wire brushes. All dust and dirt shall be wiped away from the surface. If the surface is wet, it shall be dried before the priming coat is applied.

16.4.2.3 PLASTERED SURFACE

Ordinarily, the surface shall not be painted until it has dried completely. Trial patches or primer shall be laid at intervals and when drying is satisfactory painting shall be taken in hand. Before primer is applied, all holes and undulations shall be filled up with plaster of Paris and rubbed smooth. When the surface to be primed is finally Okayed, the primer shall be applied with brushes, worked well into the surface and spread even and smooth.

16.4.3 WEATHER COAT PAINT

Painting Exterior surface two coats with Weather Coat paint on plastered surface including one primer coat.

16.4.3.1 MATERIAL

The weather coat paint shall be of approved quality and make and it shall be of approved quality and make and it shall be of approved colour and shade. The contractor shall bring them to the site in original air tight containers with seals intact.

16.4.3.2 WORKMANSHIP

The dry cement paint shall be thoroughly mixed with clean fresh water so as to produce paint of required consistency which for normal work shall be that of ordinary paint. In mixing and application, the Contractor shall follow the manufacturer's instructions. Paint for application by brush shall be strained through paint strainer. The paint shall be kept stirred and used within the specified time of the manufacturer. Hardened or damaged paint shall not be used.

The paint shall be applied by means of brushes and in the manner specified by the manufacturer. The number of coats shall be as mentioned in the item. The subsequent coats shall be applied after the preceding coat is properly cured and has thoroughly hardened,



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inspected and approved and as per manufacturer's specification. Absorbent surface shall be evenly damped so as to give even suction. In dry weather, freshly painted surfaces shall be kept damp for at least two days and protected from direct sun.

16.4.3.3 MEASUREMENT

The work shall be measured in sq.m of the finished area and shall be in accordance with IS:1200-1964. The rate shall include the cost of all labour and materials involved in all the operations described above.

Measurement shall be as follows:

Description of works	Measurement
Multiplying coefficient	
Flush door	Flat including frame 1.0 each side
Fully paneled	Flat including frame 1.25 each side
Fully glazed	Flat including frame 0.5 each side
Part panel/part glazed	Flat including frame 1.4 each side
Railing with balusters, guard bars all over-	Flat overall 1.0 for painting

16.4.4 READY MIXED PAINT

All ready mixed paints shall be of approved brand and manufacture and of the required shades. The different surfaces to be painted shall be prepared in the same way as described under "Painting priming coat on wood, iron or plastered surface". The priming coat shall be dried up completely before painting is started. The number of coats to be applied shall be as stipulated in the description of the item. The painted surface shall present a uniform appearance and glossy finish, free from streaks, blisters, etc.

16.4.4.1 MEASUREMENT

Measurement shall be in accordance with clause 16.4.3.3. The rate shall include the cost of all labour and materials involved in all the operations described above.

16.4.5 PLASTIC EMULSION PAINT

Plastic emulsion paint of the make and shade approved by the Employer/ Engineer shall be used. The paint shall generally be used only on the plastered/POP surface and on priming coat if needed. The surface shall be thoroughly cleaned of dust, etc. by washing and scrubbing and shall then be allowed to dry for at least 48 hours. It shall then be prepared to give a smooth and even surface. Any unevenness shall be made good by applying putty made of plaster of paris mixed with water on the entire surface including filling up the undulations and then sand papering the same after it is dry.

Two or more coats of emulsion paint as stipulated in the item shall be applied in the usual manner with brushes and with the interval of minimum three hours between consecutive coats. The thinner of emulsion shall be done with water as per manufacturer's instructions. The finished surface shall present a wet velvety smooth finish. If necessary, more coats shall be applied till the entire surface presents a uniform appearance.



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The precautions to be observed in painting walls with emulsion paints are: (a) oil base putties shall not be used in filling cracks, holes, etc. while preparing the surface (b) Slashes on floors etc. shall be cleaned immediately as they will be difficult to remove after hardening surfaces treated with emulsion paints shall not be washed within 3 to 4 weeks of application.

16.4.5.1 MEASUREMENT

Measurement shall be in accordance with clause 16.4.3.3.

The rate shall include the cost of all labour and materials involved in all the operations described above.

16.4.6 SYNTHETIC ENAMEL PAINT

Approved make synthetic enamel paint with the required shade shall be used for the top coat and an under coat of shade to match the top coat as recommended by the manufacturer shall be used. The number of coats including the under coat shall be as stipulated in the description of the item.

For under coat, one coat of specified paint of shade suited to the shade of the top coat shall be applied on the prepared surface and allowed to dry overnight. It shall be rubbed next day with the finest grade of wet abrasive paper to ensure a smooth and even surface and all loose particles dusted off. Top coats of specified paint with desired shade shall be applied after the under coat is completely dry. Additional finishing coats shall be applied if found necessary to ensure a uniform glossy surface.

16.4.6.1 MEASUREMENT

Measurement shall be in accordance with clause 16.4.3.3

The rate shall include the cost of all labour and materials involved in all the operations described above.

16.4.7 CHAPRA SPIRIT POLISHING ON WOOD, PLYWOOD ETC

The chapra polish shall be of the make approved by the Employer/ Engineer or as specified in the description of the item. It shall be of the required shade. The surface to be polished shall be cleaned, all unevenness rubbed down smooth with sand paper and well dusted. Visible knots shall be covered with a preparation of red lead and glue size laid on while hot.

16.4.7.1 MEASUREMENT

Measurement shall be in accordance with clause 16.4.3.3.

The rate shall include the cost of all labour and materials involved in all the operations described above.

16.4.8 READY-MADE WAX POLISHING

Ready made wax polish shall be of the make approved by the Employer/ Engineer or as stipulated in the description of the item. The surface to be polished shall be prepared in the same way (including a coat of wood filler) as described under "Varnishing" with the



Varnishing

exception that knotting, holes, cracks, etc. shall be stopped with a mixture of fine saw dust formed of the wood being treated, beaten up with sufficient bees wax to give it cohesion.

The polish shall be applied evenly with a clean soft pad of cotton cloth in such a way that the surface is completely and fully covered. The surface is then rubbed continuously for half an hour. When the surface is completely dry, a second coat shall be applied in the same manner and rubbed continuously for an hour or until the surface is dry. The final coat shall then be applied and rubbed for two hours or more until the surface has assumed a uniform gloss and is dry, showing no sign of stickiness.

16.4.8.1 MEASUREMENT

Measurement shall be in accordance with clause 16.4.3.3

The work shall be measured in sq.m of the finished area and shall be in accordance with IS:1200-1964. The rate shall include the cost of all labour and materials involved in all the operations described above.

16.4.9 WOOD PRESERVATIVE POLISHING

Oil type wood preservative - Solignum, sealoflex or any other type approved by the Employer/ Engineer shall be applied only when the surface is perfectly dry to permit of good absorption. All dirt, dust or other foreign matter shall be removed from the surface before painting. All roughness shall be sand and cleaned.

Two coats of preservative shall be applied on work unless otherwise specified. It shall be applied liberally with a stout brush and with a pencil brush at the joints of wood work. The first coat shall be allowed at least 24 hours to soak in before the second and final coat is applied. The excess of preservative which does not soak into the wood shall be wiped off with a clean any piece of cloth.

16.4.9.1 MEASUREMENT

Measurement shall be in accordance with clause 16.4.4.3.

The work shall be measured in sq.m of the finished area. The rate shall include the cost of all labour and materials involved in all the operations described above.

16.4.10 SURFACE TEXTURE PAINTING

Painting with surface texture paint (SKK Japan, spectrum or Heritage or approved equivalent) on wall all complete.

16.4.10.1 MATERIALS

The material shall be of approved shade of "5 Star" of SKK Japan or of approved equivalent.

16.4.10.2 WORKMANSHIP

The plastered wall shall be cleaned of dirt, dust and the approved surface texture paint shall be applied as per manufacturer's instruction.



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16.4.10.3 MEASUREMENT

Measurement shall be in accordance with clause 16.4.4.3

The work shall be measured in sq.m of the finished area. The rate shall include the cost of all labour and materials involved in all the operations described above.

16.4.11 ALUMINIUM PAINT:

MS grill and other metal surface if specified shall be painted two coats with Aluminium paint over one coat of metal primer.

16.4.11.1 MATERIALS

The material shall be as approved by the Employer/ Engineer.

16.4.11.2 MEASUREMENT

Measurement shall be in accordance with clause 16.4.3.3.

The work shall be measured in sq.m of the finished area. The rate shall include the cost of all labour and materials involved in all the operations described above.

16.5 TILING WORKS**16.5.1 MATERIALS**

Wall tiles and floor tiles shall be sample approved for both wall and floor tiles. Floor tiles shall be non glazed and should not skid while Wall tiles should be glazed and size shall be approved by the employer.

16.5.2 MEASUREMENT

Measurement shall be done in Sqm of area of tiling and payment shall be on the same.

16.6 LAYING OF MARBLE AND GRANITE WORKS**16.5.1 MATERIALS**

Marble and Granite shall be sample approved for both kitchen slab (Granite) and staircase (Marble). Proper polishing as per current practice shall be applied to the marble and granite surface.

16.5.2 MEASUREMENT

Measurement shall be done in Sqm of area of marble works and payment shall be on the same

17 " STEEL WORK**17.1 ROLLING SHUTTERS****17.1.1 GENERAL**

These shall include necessary locking arrangement and handles etc. these shall be suitable for fixing in the position as specified i.e. outside or inside on below lintel or between jambs of the opening. The door shall be operated with chain and crank device.

17.1.2 SHUTTERS

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These shall consist of MS laths 1.25mm thick and 80mm wide laths or as specified. The laths shall be machine rolled and straightened with an effective bridge depth of 16mm and shall be interlocked together throughout their entire length and jointed together at the end with end locks. These shall be mounted on specially designed pipe shaft. Each lath section shall be continuous single strip piece without any joint. The springs shall be coiled type. The spring shall be manufactured from high tensile spring steel wire or strip of adequate strength to balance the shutters in all positions. The spring pipe shaft etc. shall be supported on strong mild steel brackets.

17.1.3 GUIDE CHANNEL

The guide channels shall be of mild steel deep channel section and of rolled, pressed or built up (fabricated) construction. The thickness of the sheet used shall not be less than 3.15mm.

The minimum depths for guide channels shall be as follows:

Clear width of shutter	Depth of Guide Channel.
Up to 3.5m	60mm
3.5m and above	75mm

The gap between the two legs of the guide channel shall be sufficient to allow the free movement of the curtain and at the same time close enough to prevent the rattling of the curtain due to wind.

Each guide channel shall be provided with a minimum of three fixing elates or supports for attachment to the walls or column by means of bolts or screws. The spacing of cleats shall not exceed 0.75m. alternatively, the guide channels may also be provided with suitable dowels, hooks or pins for embedding in the walls.

The guide channels shall be attached to the jambs, plumb and true, either in the overlapping fashion, projecting fashion or embedded in grooves, depending on the method of fixing.

The cover of shaft, spring etc. shall be of the same material as that of lath.

17.1.4 FIXING

Brackets shall be fixed on the lintel or under the lintel as specified with rawl plugs, and screws bolts etc. the shaft along with the spring shall then be fixed on the brackets.

The lath portion (shutter) shall be laid on ground and the side guide channels shall be bound with it with ropes etc. the shutter shall then be placed in position and top fixed with pipe shaft with bolts and nuts. The sides guide channels and the cover and frame shall then be fixed to the walls through the plate welded to the guides. These plates and bracket shall be fixed by means of steel screws bolts, and rawl plugs drilled in the wall. The plates and screws bolts shall be concealed in plaster to make their location invisible. Fixing shall be done accurately in a workman like manner that the operation of the shutter is easy and smooth.

17.1.5 PAINTING

All surfaces are to be painted with primer coat and minimum two coats of enamel paints after drying and thoroughly cleaned to remove all loose scale and loose rust. Surface not in contact but inaccessible after shop assembling, shall receive the full – specified protective treatment before assembling.

17.1.6 MEASUREMENT & RATE

The measurement will be done in height multiplied by width of the shutter, i.e. in Sqm. No extra will be paid for like shutter cover box, edges, etc. The rate shall be inclusive of labour, material, painting all complete.



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17.2 MS COLLAPSIBLE GATE

17.2.1 GENERAL

Ms collapsible gate should be of bottom rolling type and confirming to IS 10521-1983 standard. All surfaces are to be painted with primer coat and minimum two coats of enamel paints after drying and thoroughly cleaned to remove all loose scale and loose rust.

17.2.2 MEASUREMENT & RATE

The measurement will be done in height multiplied by width of the shutter, i.e. in Sqm. The rate shall be inclusive of labour, material, fixing, painting all complete.

17.3 MS SPIRAL STAIR

17.3.1 GENERAL

It should be made from 4.5" dia medium weight ms as black pipe post, 1.25" dia black pipe as handrail 0.75" square pipe and 4x20mm flat for steps. All surfaces are to be painted with primer coat and minimum two coats of enamel paints after drying and thoroughly cleaned to remove all loose scale and loose rust.

17.3.2 MEASUREMENT & RATE

The measurement will be done in running vertical height from floor to floor i.e. in Meter. The rate shall be inclusive of labour, material, fixing, painting all complete.

17.4 STAINLESS STEEL STAIR HANDRAIL

17.4.1 GENERAL

Stainless Steel railing should be fabricated from 2 inches circular pipe as vertical post and 1 inch circular pipe as handrail with 1 inches circular pipe as 3 layers horizontal member including intermediate supports at 2m interval. Height of railing should be at least 90 cm.

17.4.2 MEASUREMENT & RATE

The measurement will be done in running meter. The rate shall be inclusive of labour, material, welding, fixing all complete.

SPECIFICATION FOR WATER SUPPLY AND SANITARY WORK

The purpose of building is for only storing equipment, spare parts etc. Therefore there is no any provision made for water supply and sanitation work. However it will be the responsibility of the contractor to lay the required rain water drainage pipe lines from the building roof to the existing nearby surface drain through 75 mm dia UPVC pipe as per instruction of site Engineer.

Measurement shall be taken in lot or job as mention in the BOQ. In the Price Schedule, the lump sum price shall include full compensation for all costs incurred in furnishing all materials, labor and other operations related to complete the job

SPECIFICATION FOR ELECTRICAL WORKS

a. ELECTRICAL INSTALLATION

1 GENERAL

- 1.1 The following specifications will apply under all circumstance to the equipments and fittings to be supplied and installed against this contract and it is to be insured that the Contractor shall obtain for himself at his own expenses and his own responsibility all the purpose of making the tender and for entering into a contract keeping in view the specifications detailed hereunder, drawings and design of the electrical installation and inspection of site etc. All electrical works to be executed under this contract shall be carried out of a highest degree of technical quality and workmanship. Installation shall be safe, simple, systematic order so that a general electrician can easily solve the problem arises during the maintenance of the system.
- 1.2 The tender rates shall include for the cost of material, design, erection, connection, testing and commissioning, supervision, transport, tools, all taxes, breakage, wastage, sundries, scaffolding, and maintenance of installation works for guarantee period of one year etc.
- 1.3 It will be the sole responsibility of the contractor to make required calculation & design for illumination, power & cooling/air conditioning system and receive approval for the same.

2 SCOPE OF WORK

- 2.1 The scope of work under this contract shall under due consideration of the requirements as stipulated in the specification include;
 - a) Supply and installation minimum 25 sq mm three phase copper cable or as per instruction of Electrical Engineer from nearest LT supply to proposed building.
 - b) Supply and installation of the main panel board, distribution boards and sub distribution boards after getting approval from project.
 - c) Supply and laying of 1100 V grade multi core PVC insulated copper cable.
 - d) Supply and wiring of Light/Fan and Power points with PVC insulated copper conductor cables in concealed HDP pipe in wall, ceiling and floors as per drawings.
 - e) Supply and erection of Telephone Distribution Board and Telephone junction boxes as per drawings.



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- f) Supply and fixing of lighting fixtures, power & telephone sockets, switches etc. as per drawings.
- g) Supply and embedding of Earthing Materials and connections to Main & Sub Distribution Boards with bare copper conductor in concealed HDP pipe wherever applicable.
- h) Excavation, backfill, cutting and patching, brick-work and concrete work, sleeves, inserts, anchors, etc. as required for proper installation in accordance with the requirements drawings and specifications.
- i) Testing and commissioning of the electrical equipments including Main and Sub distribution Boards, lighting fixtures, power and telephone sockets etc.
- j) Where the electrical work is associated with the work of the others, the contractors shall confer with the persons affected and shall furnish them with all necessary information, drawings, dimensions etc. and shall coordinate the electrical work with the work of other trades to insure a satisfactory installation, in accordance with the drawings and specifications and with the high standards of trade practices base on I.S. code of practice.
- k) Whenever recessed fittings are required to be provided the electrical contractor shall be responsible for informing the building contractor to keep the necessary recesses in the slab, columns, beams and in the false ceiling.

3 DESCRIPTION OF WORK

The description of work includes the following:

- L.V. electrical installation of Store House Building.
- Supply and laying of PVC insulated copper cable armoured and unarmoured of different sizes laid in ground, PVC duct, HDP conduit as mention in the BOQ.
- Supply and laying of PVC insulated telephone indoor pair type cables of different sizes laid in PVC duct and HDP conduit as mentioned in the BOQ.
- Laying PVC type conduits for computer networking and smoke detector.
- Supply and installation of Main Panel Board, Distribution Board and Sub Distribution Board, lighting fixtures, power and telephone sockets, switches, earthing and Telephone Distribution Boards, Telephone junction boxes as per drawings and specifications.
- Laying of HDP pipe in wall, ceiling and floors and drawing of conductor through HDP pipe as per drawing and specifications.
- Testing and commissioning.

b. GENERAL SPECIFICATIONS FOR ELECTRICAL WORKS

1 GENERAL REQUIREMENT

- 1.1. All fittings, accessories and appliances shall conform to relevant British or Indian standards whichever applicable.
- 1.2. All wiring shall be installed in accordance with British or Indian standards and shall be conduit wiring or as instructed by the Employer/ Engineer.



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- 1.3. The system shall have 230V, 50Hz, single phase two wire AC supply or 400 V, 50Hz three phase system four wire AC supply whichever applicable as per drawing or as instructed by the Employer/ Engineer.
- 1.4. The notation R, Y and B in the three phase system indicate three different phases to be connected in the circuits and while connecting the circuits the color codes of different phases should be strictly followed.
- 1.5. The incoming section of three-phase main distribution board shall be provided with suitable barriers to maintain phase segregation.
- 1.6. All electrical fittings and wiring accessories shall be installed in accordance with IS – 1963.
- 1.7. The system should provide ease to fittings for maintenance and repair and for any possible modification to the system.
- 1.8. There shall be two distinct circuits, one for lights and fans and the other for power appliances.
- 1.9. Prior to the installation of the lighting, fans and plug points and distribution boards, switches etc. final positions shall be ascertained by the Contractor with the Employer/ Engineer.

2 ISOLATION AND PROTECTION

- 2.1 Means for isolating the supply to the building shall be provided to the point of commencement of supply through LT, TP MCCB in the Main Panel Board (MPB) as shown in the design drawings. The Main Distribution Boards controlling the supply to the building should be readily accessible.
- 2.2 Means for projecting the different circuits there shall be Sub Distribution Boards having DP, MCB Isolator and outgoing MCB's for light and power circuits as shown in the drawing. The Sub Distribution Boards controlling the supply to the different circuits in the building should be readily accessible.
- 2.3 Protective devices such as MCCB/MCB used in the installation should be capable of interrupting any short circuit current that may occur, without danger.
- 2.4 The switches shall be connected to the lives only and never on neutral.
- 2.5 An earthing conductor with insulator covering shall be installed along with power circuit conductors and earthing with bare copper conductor in duct or through HDP pipe shall be installed to the Main Panel Board, Distribution Boards and Sub Distribution Boards as per drawing.

3 LIGHTS AND FAN SUB CIRCUITS

- 3.1 Light and fans may be wired on the common circuit. Each sub circuit shall have not more than a total of ten points of lights including fans, 5A sockets outlets whichever applicable as per drawing. The load on each sub circuit shall be restricted to 800 Watts.

4 POWER SUB CIRCUIT



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- 4.1 The load on each power sub circuit should normally be restricted to 2000 Watts. In no case there shall be more than three outlets on each sub circuit. A single outlet of capacity 3000 Watts per circuit shall be provided for dedicated power supply for air conditioning. In no case, load more than 3000 watt shall be exceeded per circuit.

5 SWITCHES

- 5.1 A switch shall be provided adjacent to the normal entrance to any area for controlling the general lighting in that area, the switches should be fixed in a usable wall space and should not be obstructed by a door or window in its fully open position. One light shall be connected to both switch and separate electronic solid fan regulator. Only in some cases two lights with one switch and three lights with one switch shall be connected as shown in the drawings.

6 FLEXIBLE CORDS

- 6.1 Flexible cords shall be used only for pendants and for connection of fixtures only. Flexible cords shall not be used in the following cases.
- (a) As a substitute for the fixed wiring.
 - (b) For concealed wiring.
 - (c) If attached permanently to the walls, ceiling. etc.

7 MATERIALS

- 7.1 The contractor has to get approval the drawing if applicable and the samples of all the materials and equipments to be supplied and installed under this contract. Non approval given by the Employer/ Engineer to any drawings or samples submitted by the contractor shall in any way exonerate the Contractor from his liability to carry out the work in accordance with the terms of the contract.
- 7.2 All materials and equipments shall be new and shall be in accordance with the standard as established by the Indian standard. Where material or equipment are specified or shown on the drawings by name of the other manufactures may be considered for use if of equal quality appearance and electrical and mechanical characteristics and approved by the Employer/ Engineer. If the Contractor wishes to use any other materials or equipment, he must obtain permission of the Employer/ Engineer in writing.
- 7.3 Any material supplied by the Employer, if damaged in any way during the execution of work or otherwise, shall be replaced by the Contractor at his own cost.

8 INSTALLATION

- 8.1 Installation of all lighting shall be done experienced electricians and supervised by the Employer/ Engineer. Lighting fixtures shall not be done installed until wall and ceiling finishing work is completed.
- 8.2 All pendent type fixtures in the same room shall be installed at a uniform height from the floor level. Mounted fixtures shall be properly aligned and mounted as indicated on the drawings or as directed by the Employer/ Engineer. Where the fixtures does not itself provide a suitable cover for the fixture outlet box, suitable cover plate on canopy shall be provided.

9 STORAGE AND PROTECTION



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- 9.1 Particular care shall be taken to protect materials, equipment and fixtures against dampness and mechanical damages during period of storage and progress of construction and cleaning operations.

10 QUALITY OF WORK

- 10.1 The work shall be carried out in the best workman like manner and any defect or minor changes in the design etc. If pointed out shall be carried out by the contractor without any extra charge.
- 10.2 Workmanship and good appearance of the installation shall be of equal, and all portions of the work shall be so laid and installed that the work as whole is of uniform quality and shall present a neat appearance in a manner meeting the approval of the Employer/ Engineer.
- 10.3 The Contractor shall verify in the field all measurements necessary for the electrical work and shall assume responsibility.

11 PROGRESS AND COMPLETION OF WORKS

- 11.1 The work shall be commenced immediately after the Contractor receives instructions to proceed.
- 11.2 The Contractor in consultation with the Employer/ Engineer draws up a time schedule on commencement of the work. This time schedule must be adhered to.
- 11.3 The Contractor/Engineer shall employ adequate labors to complete the work within the schedule time and shall make his own arrangement for housing labor and materials etc. A whole time electrical supervisor shall be employed by the Contractor who will remain at site to receive orders or any other instructions from the Employer/ Engineer.
- 11.4 Materials which are defective or damaged during the progress of work shall be replaced or repaired in as approved manner at the expense of the Contractor. The installation shall comply with all applicable laws and ordinances and with the requirements of Indian codes and as specified herein or shown on the drawings. The progress of the electrical works shall be carried out so as to conform to the progress of the work and entire installation shall be completed as soon as the condition of the building will permit.
- 11.5 Upon completion of the installation of the lighting fixtures and lighting equipments, they must be in first class operation condition and in perfect conditions. At the time of final inspection, all fixtures and equipment must be complete, with lamps and required glassware or reflector, which must be clean and free from defects. Any fixtures, reflectors or glassware brown prior to the time of final inspection and acceptance, shall be replaced at the Contractor's expense.

12. PERFORMANCE OF WORK

- 12.1 All cutting, drilling channeling, patching etc. required for installation of electrical work shall be carried out in a manner approved by the Employer/ Engineer. Any defect of finish, plaster, woodwork, metalwork masonry, concrete or other material resulting from the performance of the work shall be replaced or repaired at no expense to the Employer and to the satisfaction of the Employer/ Engineer.



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13. INSPECTION, TESTING AND COMMISSIONING

- 13.1 The Contractor shall notify in writing to the Employer/ Engineer about the completion of the work. Within thirty days from the date of this notification, the Employer/ Engineer shall send his representative to remain present at the times of carrying out the tests by the Contractors. The Contractor shall fix up this date in consultation with the Employer/ Engineer for such test.
- 13.2 The Contractor shall be responsible for providing the necessary instruments and the subsidiary earths for carrying out the tests without any extra charge.
- 13.3 Prior to test, feeders and branches shall be continuous from service contract point to each outlet, all panel feeders and devices connected and fuses in place. The Contractor shall test the electrical system for short circuits and earth. Installation resistances measured in mega ohm shall not less than 30 divided that whole installation need not be required to have an insulation resistance greater than one mega ohm. Test shall be carried out in accordance with the requirements of the B.S. and Indian codes and shall be conducted in the presence of the Employer/ Engineer. Any defect or damages in way during testing and commissioning shall be corrected or replaced by the Contractor at his own cost.

14. MAINTENANCE AND GUARANTEE

The Contractor guarantee by his acceptance of the contract that all work installed will be free from any and all defects and if during a period of one year from date of completion and acceptance of work any such defects on workmanship material or performance replace, repair or otherwise correct the defects of deficiency, without cost to the Employer, within a reasonable time. In the event of default on this guarantee by the Contractor, the Employer may have works done as required and charge the cost to the Contractor.

c. TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORKS

1 MAIN PANEL BOARD (MPB)

Panel board is intended for indoor use and shall be fabricated from high quality of mild steel sheet of minimum 2mm thickness. It shall be weather proof, dust and vermin proof with hinged cover and built in lockable device. Interiors of the board shall have ample space for incoming/outgoing cables, MCCB's and for fitting other accessories.

Three phase and neutral bus bar made of from high conductivity electrolytic copper bar shall be fitted on suitable insulator support.

The board shall be painted with two coat of primer red oxide before a final coat of enamel. Following accessories shall be provided in the board.

Three phase and neutral bus bar of high conductivity electrolytic copper of sufficient cross sectional area so that a current density of 750 Amp/sq inch shall not exceeded at normal current rating. The neutral bus bar shall be rated at not less than 50 % of the phase bus bar. Earthing bus of suitable sizes

- 600 volt supporting insulators placed sufficiently closed together to prevent bus bars sags and to withstand wet test of 3 kV and impulse withstand test of 28 kV.
- Indicating lamps for each phase



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- Volt meter (0-600V) range and ammeter (0-1000amp) range with selector switches to indicate respective switch reading of voltage and current on all phase. The voltmeter and ammeter shall be from reputed manufacture having ISO-9001 or ISI certificate.

- 1.3.1 Provisions for connecting the incoming outgoing cables mentioned in the Bill Of Quantities, all accessories including connections, fixing cable lugs, insulating materials etc all complete.
- 1.3.2 The panel board shall be Himalaya Bijuli Udhog or Hyonjan Electrical Fabricator or equivalent and tested according to the BS or IS specifications.

2 DISTRIBUTION BOARD (DB):

Distribution Boards (DB) are intended for indoor use flush mounted on wall and shall be fabricated from high quality of mild steel sheet of minimum 2mm thickness. It shall be weather proof, dust and vermin proof with hinged cover and built in lockable device. Interiors of the board shall have ample space for incoming/outgoing cables, MCCB's and for fitting other accessories.

Three phase and neutral bus bar made of from high conductivity electrolytic copper bar shall be fitted on suitable insulator support.

The board shall be painted with two coat of primer red oxide before a final coat of enamel.

Following accessories shall be provided in the board.

- Three phase and neutral bus bar of high conductivity electrolytic copper of sufficient cross sectional area so that a current density of 750 Amp/sq inch shall not exceeded at normal current rating. The neutral bus bar shall be rated at not less than 50 % of the phase bus bar.

Earthing bus of suitable sizes

- 600 volt supporting insulators placed sufficiently closed together to prevent bus bars sags and to withstand wet test of 3 kV and impulse withstand test of 28 kV.
- Indicating lamps for each phase
- Volt meter (0-600 V) range and ammeter (0-250 Amp) range with selector switches to indicate respective switch reading of voltage and current on all phase. The voltmeter and ammeter shall be from reputed manufacture having ISO-9001 or ISI certificate.
- 415 volt MCCB of the following ratings shall be used.

Incomer MCCB TP 36 kA

Outgoing MCCB TP 30 kA

Provisions for connecting the incoming outgoing cables mentioned in the bill of quantities. All accessories including connections, fixing cable lugs, insulating materials etc all complete.

- 2.2 The panel board shall be Himalaya Bijuli Udhog or Hyonjan Electrical Fabricator or equivalent and tested according to the BS or IS specifications

3 SUB DISTRIBUTION BOARD

Sub-distribution board is intended to indoor use and shall be wall mounted. It shall be fabricated from high quality of 16 gauze mild steel sheet. It shall be dust and vermin proof, provision of hinge front cover and lockable device. Interiors of the board shall have ample space for incoming/outgoing PVC insulated cables PVC insulated copper wires as mention in the bill of quantities, incoming TP MCCB's and outgoing SP MCB.



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Three phase and neutral bus bar made of from high conductivity copper bar shall be fitted on suitable insulator support. Earthing bus of suitable sizes

The board shall be painted with two coat of primer red oxide before a final coat of enamel.

Following accessories shall be provided in the board.

600 volt supporting insulators placed sufficiently closed together to prevent bus bars sags and to withstand wet test of 3 kV and impulse withstand test of 28 kv.

4 INDICATING LAMPS FOR EACH PHASE

415 volt MCCB of Mitsubishi/Terasaki (Japan) or Legrand (France or equivalent)

40 to 100 Amp, 25 kA for incoming 6 Amp or 16 Amp SP MCB 9 kA for outgoing circuits

Provisions for connecting the incoming cables and outgoing PVC insulated copper wires as mentioned in the drawing and BOQ and all accessories including connections, fixing, cable lugs, insulating materials etc all complete.

The panel board shall be Himalaya BijuliUdhyog or Hyonjan Electrical Engineering Fabricator or equivalent and tested according to the BS or IS specifications.

5 SPECIFICATION OF MOLDED CASE CIRCUIT BREAKERS

This specification covers the supply of molded-case circuit breakers. The circuit breaker shall be fabricated and tested in accordance with IEC947-2 latest revision or equivalent national standard and shall be suitable for connection to 400/230 volt,3-phase-4wire, solidly grounded system. Circuit breakers shall be rated as mentioned in the Bill Of Quantities. Circuit breakers shall be completely enclosed in a molded case and shall be factory sealed. Circuit breaker shall have a quick make, quick break, over current switching mechanism that is mechanically trip-free for simultaneous tripping of all poles. Tripping due to overload or short circuit shall be clearly marked on the breaker case. The circuit breaker shall be of inverse time and instantaneous trip type.

6 SPECIFICATION OF MINIATURE CIRCUIT BREAKERS

This specification is for the supply of miniature circuit breakers (MCB) use in SDB for the protection of final circuit. Circuit-breakers shall be suitable for use on 400/230V A.C systems and shall be a minimum short circuit rating of 9kA.

7 CIRCUIT BREAKER - SINGLE POLE

Circuit breakers shall be manually operated with trip free operating mechanism, quick make, quick break dual tripping (thermal and magnetic) type with deionizing type arc chutes.

The circuit breakers shall conform to IEC 898-1987 or equivalent national standards. All poles of such circuit breakers shall be given on each circuit breaker to show whether it is in the closed, opened or tripped condition.

8 PVC INSULATED 1100 VOLT GRADE CABLE

This Specification covers the supply of 1100 Volt, PVC -insulated stranded copper power cable of different sizes. The electric cable shall be manufactured and tested in full compliance with British Standard BS 6346: latest revision, or equivalent Indian standard IS 694

The cable shall be stranded, multi-core, with sizes as specified in the Bill Of Quantities. Conductor insulation shall be extruded PVC compound and shall be rated 1100 Volt. All reel shall be legibly marked in paint with the following information:



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- a) Size of conductor
- b) Color of insulation
- c) Length in meters
- d) Net weight of cable.

9 LAYING OF CABLES

The cable shall be so laid that they will not interfere with other structures. All water pipes , sewerage line or other facilities if exposed during the excavation in laying the cable shall be properly supported and protected until the back filling and compaction around the these facilities is completed. Sufficient clearances of electrical cable from other facilities line should be maintained as per BS or IS specification. Where cables are laid directly in the ground cable trenches of sufficient width, it shall be excavated at least below 3 ft from the ground level. Cable shall be covered by fine sand at least 3" both above and below of the cable and protected on top by bricks across the trench cross section. Road crossing should be avoided where possible, if a cable has to be laid across the road / drain a suitable size of RCC hume pipe shall be used to protect the cable.

If two or more cables are laid in the same trench care should be taken in maintaining proper spacing between them as mentioned in BS/IEE regulations or IS specification so that current carrying capacities of the cables will not be affected

Care should be taken not to damage or unnecessary strain in cable .In case of installing the cable in PVC duct and HDP excessive bends should be avoided.

10 CONDUIT

Electrical conduit used in the final sub-circuits of the electrical services shall be rigid, non-metallic HDP conduit of an approved manufacturer conforming to IS: 2509 and shall be used only with corresponding approved accessories.

The size of the conduit shall be in accordance with the number and size of electrical cables to be drawn into the conduit. The number of cables that may be drawn in a conduit shall be as specified in the table below or as stipulated in the appropriate section of the IS code or equivalent. Conduit sizes shall not be less than 19 mm diameter.

Conduit shall be embedded in building structural works and conduit runs shall be straight and shall follow the shortest route between points or as shown in electrical drawings. Wherever necessary bends or diversion may be achieved by bending the conduit or by employing approved bends, inspection boxes, elbows or similar fitting. Conduit accessories such as ceiling outlets, junction boxes shall be of approved quality. The physical integrity or the conduit and accessories as an integral electrical component shall be ensured by approved means such as the use of water-resistant cement bonding on all unscrewed conduit joints and termination and use of rubber gasket in entry points to junction boxes or outlets or other approved means.

Conduit embedded in civil works shall include an 18 SWG galvanized 'fish' wire inserted during the time of conduit laying to facilitate drawing in cables a later stage.

11 LIGHTS AND FAN POINTS



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Concealed wiring to light and fan points shall be run inside the walls, ceiling and floors in a concealed $\frac{3}{4}$ " diameter HDP pipe with 3/22 SWG PVC insulated, 600 V grade, single core, standard copper conductor cables conforming to the relevant British or Indian standards. The conduit pipe shall terminate in approved GI sheet metal junction boxes of appropriate size as shown on the drawings.

5A control switches shall be incorporated in the general lighting circuits as indicated in the drawings.

The lights and fan points includes the materials required for the connection of fixtures, ceiling fan and exhaust fan to the metal junction boxes and switches as shown on the drawings. Exhaust fans are to be provided to every kitchen and Fans are required to be provided to every room.

12 POWER POINTS

Contractor has to submit the detail calculation and drawings for electrical system for the power point requirement. Calculation must demonstrate the requirement of size of cables used, ratings of power devices.

- 12.1 Concealed wiring to power socket outlets shall be by means of 2x7/22 SWG PVC +1x3/22 SWG or 2x7/20 SWG PVC +1x3/20 SWG PVC insulated 600 V grade, single core, standard copper conductor cables in a concealed rigid $\frac{3}{4}$ " diameter HDP pipe in the floor, slab or brickwork and terminated in 18 SWG thick GI sheet metal boxes conforming to the relevant Indian or British standards to meet the approval of the Employer/ Engineer.
- 12.2 The power points includes the materials required for the connection of socket outlets to the MCB's installed on the sub-distribution boards as shown on the drawings.

13 SUPPLY CONNECTION TO LIGHTS AND FAN POINTS

- 13.1 The supply connection means the conduit run from MCB's installed on the Sub Distribution Boards to the GI sheet metal junction boxes connecting lights and fan sub-circuits as shown on the drawings. Wiring of supply connection shall be done means of 2*3/20 SWG, PVC insulated 600 V grade single core standard copper conductor cables in a concealed $\frac{3}{4}$ " diameter HDP pipe in floors, slab or brickwork as shown on the drawings and shall confirm to the relevant Indian or British standards.
- 13.2 The supply connection include the materials required for the connection of MCB's installed on the Sub Distribution Boards to the GI sheet metal junction boxes as shown on the drawings. It shall be measured and paid to the Contractor in run meters approved by the Employer/ Engineer.

Following lighting level shall be maintained –

- | | | |
|----|-----------------|---------|
| a. | Corridor | 100 lux |
| b. | Switchyard | 20 lux |
| c. | General / Roads | 10 lux |



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d.	Bed Room	150 lux
e.	Kitchen	250 lux
f.	Living Room	200 lux

Contractor has to submit the design for illumination to fulfil the above minimum requirement and get approval to initiate the electrical works.

14 METAL JUNCTION BOXES

- 14.1 The metal junction boxes shall be hot dipped 18 SWG thick galvanized iron sheet metal boxes. It shall be fixed in wall or beams as shown on the drawings or as instructed by the Employer/ Engineer.
- 14.2 The conductors shall be joined mechanically tight in the junction boxes and insulated with proper layers and thickness of approved electrical tape providing insulation not less than that of the conductor. The junction boxes shall be covered with GI sheet of appropriate size and fixed tightly.

15 SINGLE POLE SWITCHES

- 15.1 All switches shall be single pole one way or two way as required and of wall mounted 230 V, 5A suitable for recessed mounted and flush finish on wall with 18 SWG thick GI sheet metal box and shall be installed at any height up to 1.5 m above the finished floor level.
- 15.2 The type of switches shall be CPL/Anchor dyna type or equivalent as approved by the Employer/ Engineer.

16 POWER SOCKETS

- 16.1 All the power outlet shall be 230 V, 50 Hz 6/16A, 3 pin Switch socket SP Dyna type switch suitable for recessed mounting and flush finish on wall including 18 SWG thick GI sheet metal box and screws and shall be installed 20 cm above the finished floor level.
- 16.2 The type of power outlets shall be CPL/Anchor Dyna type or equivalent as approved by the Employer/ Engineer.
- 16.3 The power outlets shall be switched and earthed with 1*3/20 SWG or 1x3/22 SWG PVC insulated stranded copper wire.

17 WALL MOUNTED FIXTURES

- 17.1 General type wall mounted fixtures shall be 250V, 50 Hz fixture shall be wall bracket type including holder and 3/5/9/15 watt LED bulb as specified in the annex -2 and shall be installed 2.3 m above the finished floor level. Before installation the Contractor has to approve the samples by the Employer/ Engineer.
- 17.2 Decorative type compact fluorescent lamp (CFL) fitted wall bracket shall be with 2 no of SL type 18 watt CFL lamps. It shall be SL Duo fancy FL 734 Phillips type or equivalent. Decorative type CFL luminaries shall be made of CRCA sheet steel (powder coated) housing, finished in white inside and outside fitted with high purity anodized aluminum mirror reflector. G23 base and complete with control gear. Two 11 Watt S type CFL shall be fitted. It shall be BJMS211 Bajaj type or equivalent.
Ceiling mounted dome fixture shall be 250 V, 50 Hz, milky and frosted 200 mm diameter round dome fixture including metallic holder with ceramic insulator, base frame, and 60 W



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GLS bulb as specified in the price schedule and bill of the samples by the Employer/ Engineer.

18 CEILING AND EXHAUST FANS

The type of ceiling fan shall be as specified in the price schedule and Bill of Quantity or equivalent quality to be approved by the Employer/ Engineer. Before installation the Contractor has to approve the samples by the Employer/ Engineer.

It includes installation, connection of ceiling fan and fixing of electronic solid fan regulator suitable for recessed mounting and flush finish on the wall with 18 SWG thick GI sheet metal box near the single way control switch and the exhaust fan with appropriate frame shall be installed as shown on the drawings or as instructed by the Employer/ Engineer.

Ceiling fans shall have the power balanced motor with double ball bearings. The blades shall be accurately balanced to ensure smooth service and their contours shall be designed for maximum air delivery air cutting noise. The blades shall be made from non corrosive aluminum alloy and coils shall be from electrolytic copper with best insulating coating.

The exhaust fan shall be totally enclosed highly efficient heavy or light duty motor as mentioned in the Bill of Quantities with pressure die cast aluminum rotor mounted on two ball bearings. The blades shall be accurately balanced to ensure smooth service and their contours shall be designed for maximum air delivery at minimum power consumption. It shall be stove enameled glossy paint finish/epoxy paint with specially pre treated components to enhance corrosion resistance. It shall confirm to IS 2312 with latest amendment.

Low voltage (LV) 50 W halogen lamp luminaires shall be closed dichroic germiline type. It shall consist of front glass cover, dichroic coating reflector, specially designed GU bases, Axial coil. It shall be fitted with 12V 50 W halogen lamp, transformers and other accessories. It is DN 651 Philips type or equivalent.

Flood light luminaires shall be cast aluminum housing for corrosion resistance and is provided with a glass cover to ensure insect free performance without the ingress of water provision. Lamp replacement should be from the front of the luminaires and shall consist of 1x300 W halogen lamp and all other accessories complete.

Garden light shall be of decorative post top lanterns consisting of aluminum canopy, opal acrylic bottom cover and cast spigot, suitable for use with 150W GLS lamps/HPMV 125 W/70 W HPSV lamp. It shall be fitted with 150 W GLS lamp and also inclusive of 75 mm dia galvanized pipe of 2.0 meter long and other accessories.

19 AIR CONDITIONER

Split type wall mounted room air conditioners shall be operated on 230 V, 50 Hz. The heating and cooling capacity shall be minimum 22000 BTU/hr and 27000 BTU/hr respectively. It shall be highly efficient and shall have at least following features:

- low vibration twin rotary compressor
- power select function
- power level monitor
- auto change over (cooling/heating)



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- auto restart function
- 24 hr on off programmable timer
- 1 hr off timer
- Auto swing louver & auto air swing
- LCD wireless remote control
- Detachable & washable front panel & air filter.

20 EARTHING

20.1 EARTHING SET

The earthing shall be done as per IS 3043-1966.

The earthing set shall consist of the following:

- a) 600x600x3.15 mm electrolytic copper plate as earth electrode;
- b) The hard drawn copper earth strip of size 25x3.15 mm shall connect the earth electrode, main panel, and distribution boards as per drawing and instruction;
- c) 1/4"dia, 1"long electroplated copper nuts & bolts;
- d) 1.5 meter long, 19mm dia, GI pipe and other required accessories for watering;
- e) Cement concrete work of ratio 1:4:8 for watering arrangement as per drawing;
- f) Charcoal and salt;
- g) 600x600x50 mm concrete slab cover

20.2 INSTALLTION METHOD

The earthing shall be done as follows:

- a) Joints between wires and copper strip shall be done by solder less "pressure" connectors.
- b) Underground joints shall not be permitted in any case.
- c) In making earth connection advantage must be taken of the permanently moist soil available in the vicinity of the building.
- d) Earth wire connections to any apparatus, or any termination shall be done by solder less crimping type cable lugs.

20.3 EARTH RESISTANCE

The earth resistance in no case shall exceed 5 Ohms. The earthing shall be improved by addition of extra earthing set to bring down the value of earth resistance in case measured value comes more than 5 Ohms by the Contractor in no extra cost.

The Contractor shall follow the standards listed below wherever applicable to this contract.
IS Specifications:

- | | |
|---------------------------------------|--------------|
| (b) Switch gear bus bars | IS 375-4963 |
| enclosures for low Voltage switchgear | IS 2147-1962 |
| (f) PVC cables | IS 1554-1964 |
| (g) Tungsten filament lamps. | IS 418-1963 |
| (h) Ceiling fans | IS 374-1966 |



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(i) Steel boxes for enclosure of electrical	IS 5113-1969
(j) Switch socket outlets.	IS 4615-1968
(k) Three pin plug and sockets	IS 1293-1967
(l) Switches for domestic and similar purpose.	IS 3854-1966
(m) Copper conductors.	BS 6360
Codes of Practice:	
(a) Wiring	BS 3346
(b) Cables	BS 2004
(c) Earthing	IS 3043-1966
(d) Electrical wiring installation	IS 732-1963
(e) Switchgear installation	IS 3072-1965 Part I
(f) Light protection	IS 2309-1969
(g) Fixtures (edition.)	IEC Lighting hand book (5th
(h) Emergency lights	BS 5266
(i) Luminaries	IEC 598

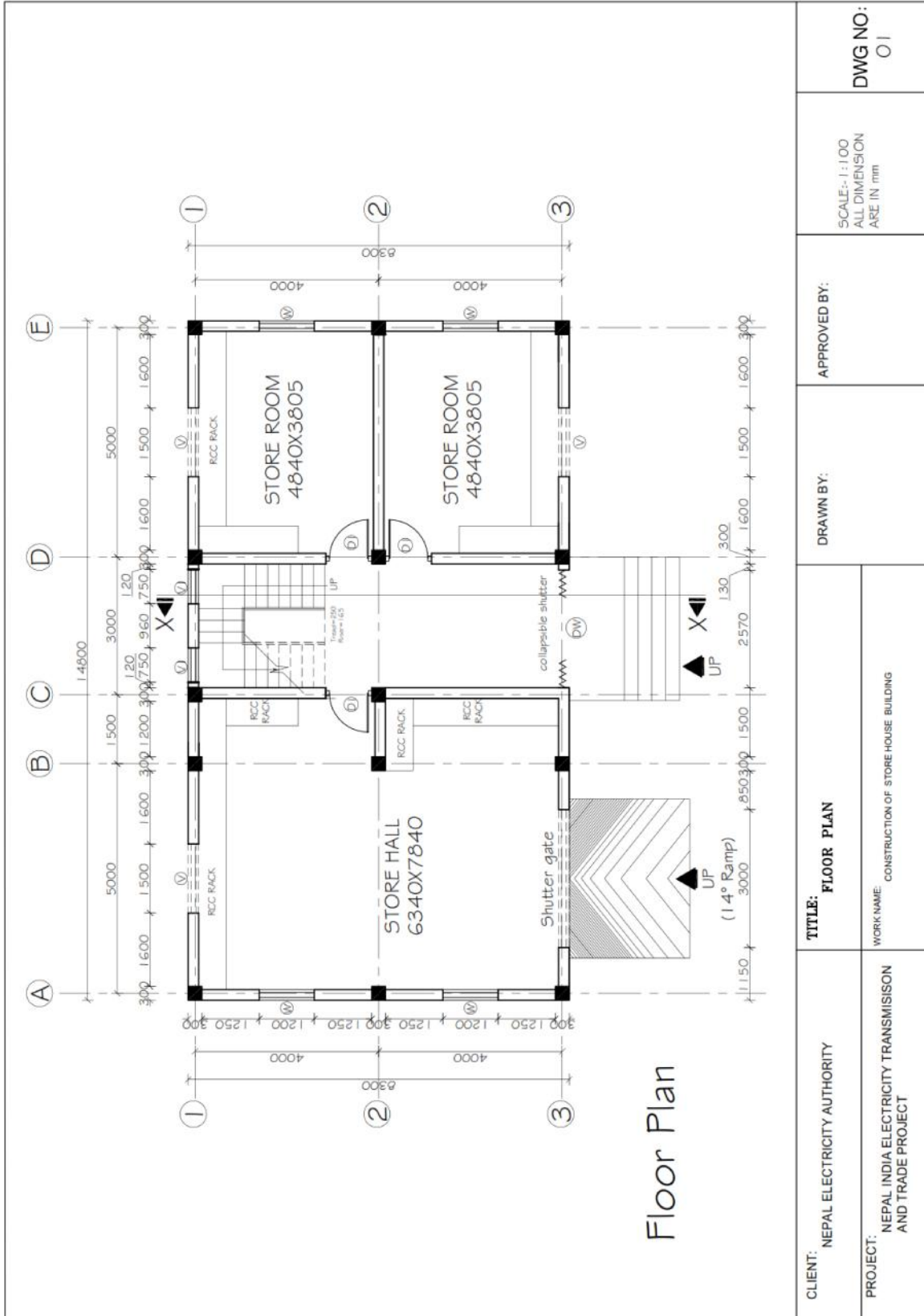
21 MEASUREMENT AND PAYMENT

Measurement shall be taken in lot or job as mention in the BOQ. Payment for the Contract item "Electrification work and Fixtures" will be made at the lump sum price bid. Therefore, in the Price Schedule, the lump sum price shall include full compensation for all costs incurred in furnishing all materials, labor and other operations related to Electrification and fixtures of the respective building. **Detailed Quantity required for Electrification work and fixtures which shall include but not limited to are attached to Annex-1**



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Drawings

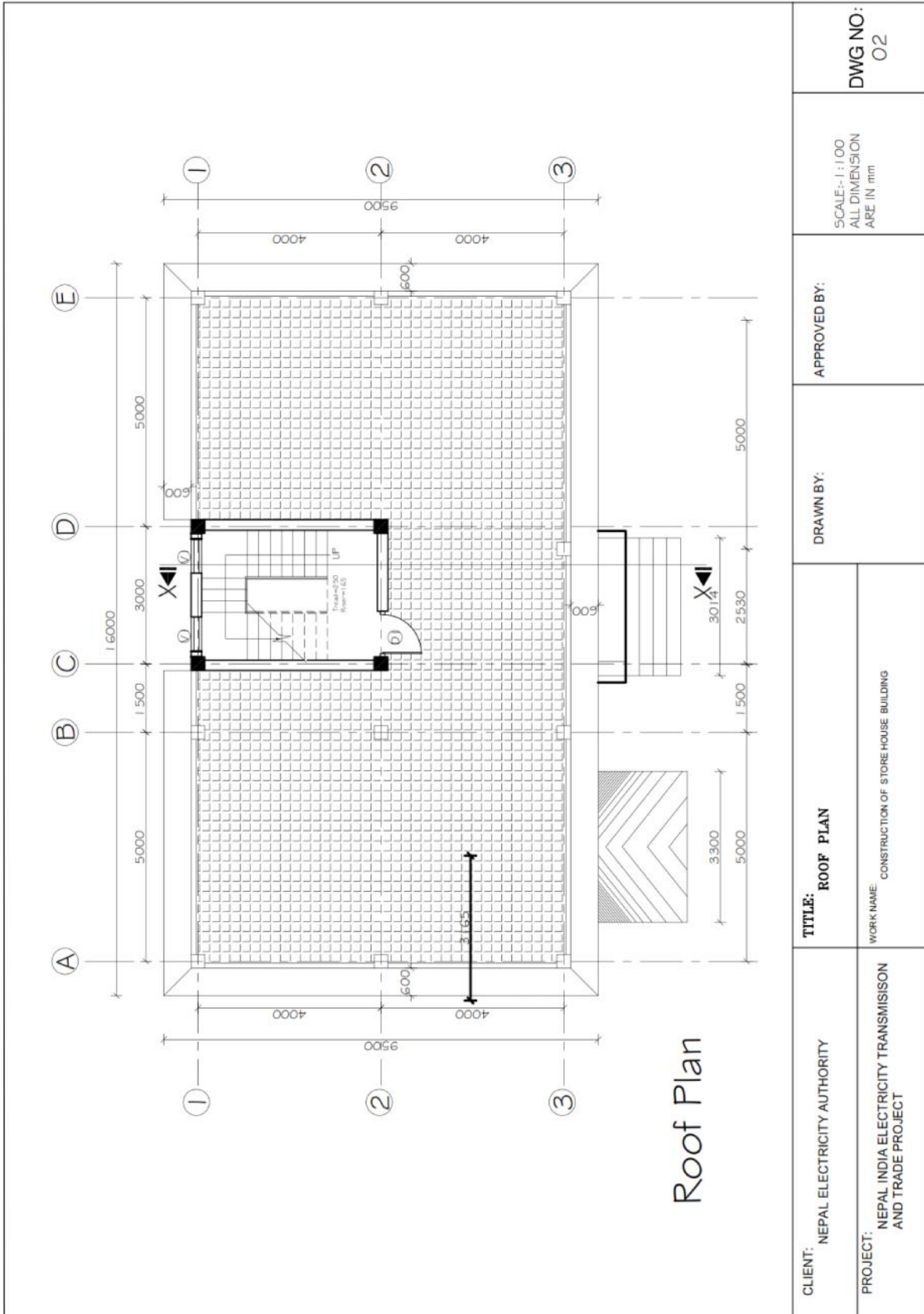


Floor Plan

<p>CLIENT: NEPAL ELECTRICITY AUTHORITY</p>	<p>TITLE: FLOOR PLAN</p>	<p>DRAWN BY:</p>	<p>APPROVED BY:</p>	<p>SCALE:- 1:100 ALL DIMENSION ARE IN mm</p>	<p>DWG NO: 01</p>
<p>PROJECT: NEPAL INDIA ELECTRICITY TRANSMISSION AND TRADE PROJECT</p>	<p>WORK NAME: CONSTRUCTION OF STORE HOUSE BUILDING</p>				



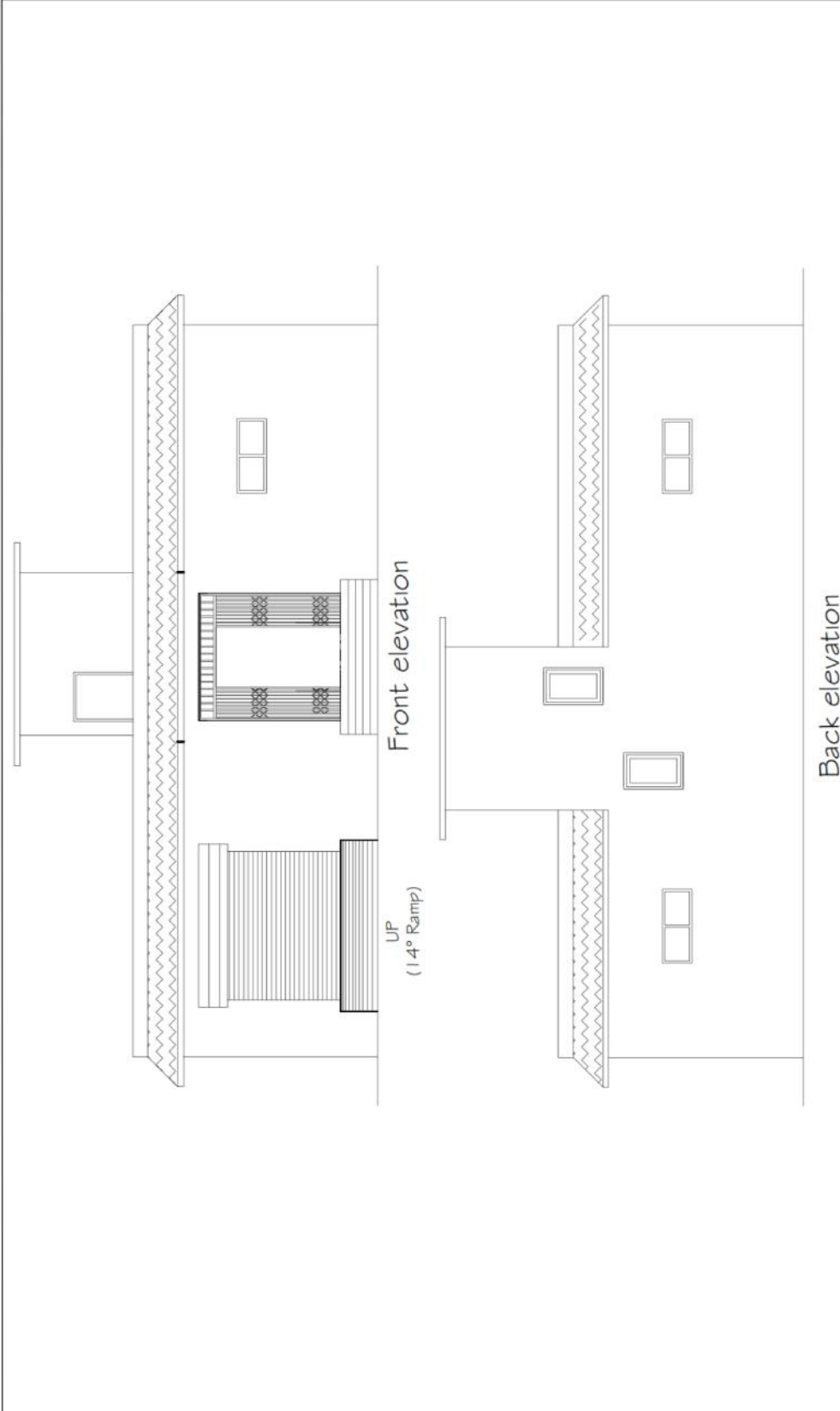
Handwritten signature/initials



<p>CLIENT: NEPAL ELECTRICITY AUTHORITY</p> <p>PROJECT: NEPAL INDIA ELECTRICITY TRANSMISSION AND TRADE PROJECT</p>	<p>TITLE: ROOF PLAN</p> <p>WORK NAME: CONSTRUCTION OF STORE HOUSE BUILDING</p>	<p>DRAWN BY:</p>	<p>APPROVED BY:</p>	<p>SCALE:- 1:100 ALL DIMENSION ARE IN mm</p>	<p>DWG NO: 02</p>
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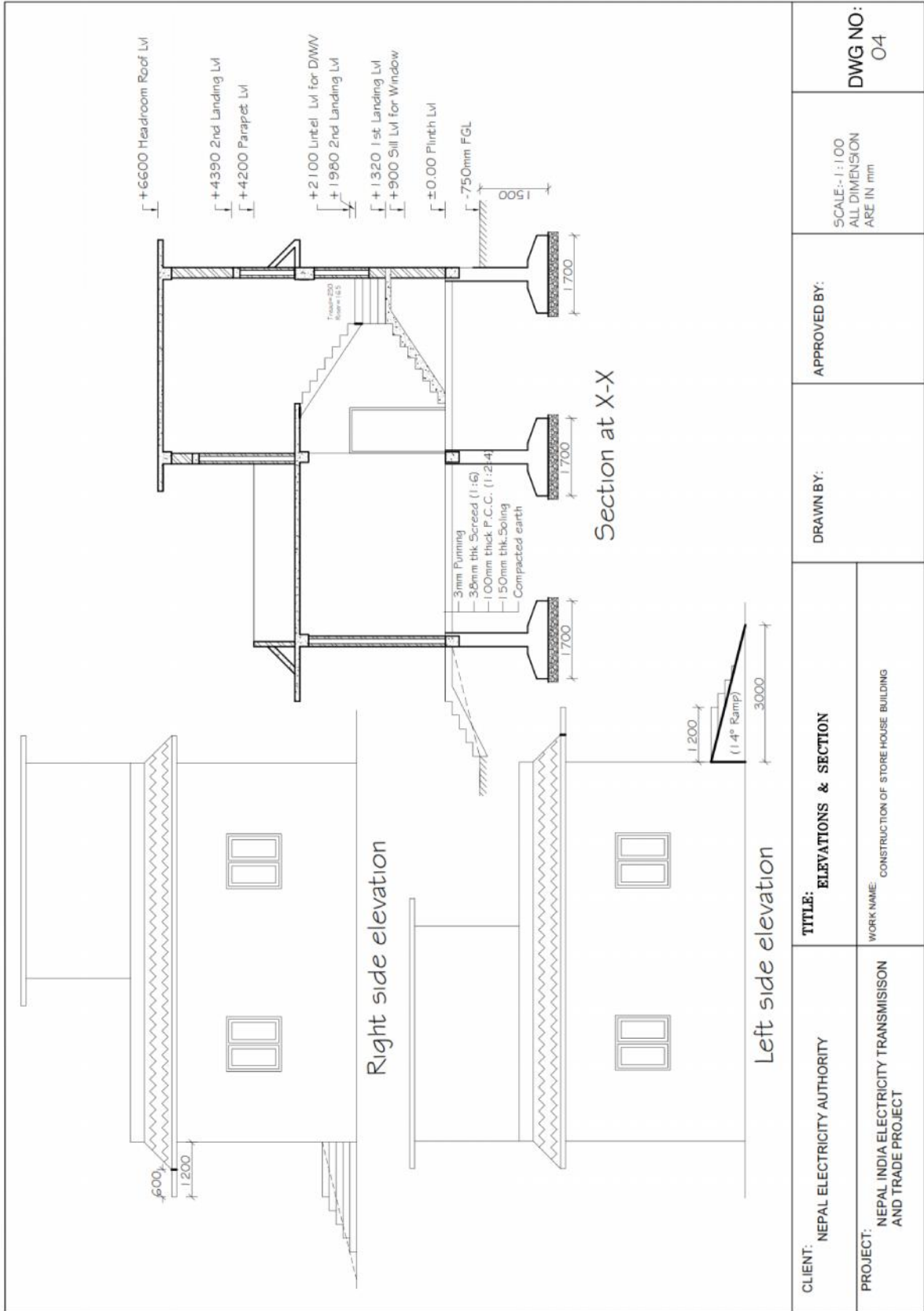


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		<p>Front elevation</p> <p>UP (14° Ramp)</p> <p>Back elevation</p>		<p>SCALE:- 1:100 ALL DIMENSION ARE IN mm</p>	<p>DWG NO: 03</p>
		<p>TITLE: ELEVATIONS</p> <p>WORK NAME: CONSTRUCTION OF STORE HOUSE BUILDING</p>	<p>DRAWN BY:</p>	<p>APPROVED BY:</p>	
<p>CLIENT: NEPAL ELECTRICITY AUTHORITY</p>	<p>PROJECT: NEPAL INDIA ELECTRICITY TRANSMISSION AND TRADE PROJECT</p>				



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<p>CLIENT: NEPAL ELECTRICITY AUTHORITY</p> <p>PROJECT: NEPAL INDIA ELECTRICITY TRANSMISSION AND TRADE PROJECT</p>	<p>TITLE: ELEVATIONS & SECTION</p> <p>WORK NAME: CONSTRUCTION OF STORE HOUSE BUILDING</p>	<p>DRAWN BY:</p>	<p>APPROVED BY:</p>	<p>SCALE:- 1:100 ALL DIMENSION ARE IN mm</p>	<p>DWG NO: 04</p>
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Supplementary Information

Preamble to 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 Project Manager and the Contractor. Should the Contractor carry out such work without the prior agreement of the Project Manager, the Project Manager 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 Project Manager'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.



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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.



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Bill of Quantity

Name of Work:- Construction of Store Building at Dhalkebar Substation
 Location:- Dhalkebar Substation, Dhanusha

Name & Address of Bidder:

NCB No: NIETTP-32-W-NCB-4.12-SB

S.No	Description of Works	Unit	Quantity	Rate (NRs.)		Amount	Remarks
				In figure	In Words		
A	Civil Works						
1	Site preparation and Earth work						
a	Site preparation (Cutting and cleaning all rubbish, bushes, top soil and debris etc. and leveling site etc before starting construction works) and clearing the site all complete after completion of the work as per the instruction of site incharge.	m²	231.24				
b	Earthwork excavation in foundation/trench upto 1.75 m depth including ramming the ground and stack the excavated material within 30 m, lead as directed by site incharge all complete.						
b-i	Mechanically (By Excavator)	m³	74.05				
b-ii	Manually	m³	49.37				
c	Earth filling under floors/foundation/trench with the stacked earth in 150 mm thick layer with sprinkling water ramming and consolidation all complete.	m³	112.80				



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2	Stone soling in line and level including filling in the joints with sand all complete.	m ³	28.35				
3	Plain cement concrete in Foundation with cement, sand and crushed aggregate in 1:4:8 ratio including Mixing, laying, curing and finishing all complete.	m ³	19.08				
4	Structural concrete in any form, size shape and level for all R.C.C. works including flooring, lintels etc with cement, sand and crushed aggregate in 1:2:4 ratio including Mixing, laying, compacting, finishing and curing all complete.	m ³	20.59				
5	38mm thick screeding with cement, sand and crushed aggregate in 1:2:4 ratio including Mixing, laying, finishing and curing all complete.	m ²	139.55				
6	3 mm thick cement punning including Mixing, laying, finishing and curing all complete.	m ²	234.55				
7	Structural concrete in any form, size shape and level for all R.C.C. works including columns, beams, slab etc with cement, sand and crushed aggregate in 1:1.5:3 ratio including Mixing, laying, compacting,	m ³	54.03				

	finishing and curing all complete.						
8	Fixing TMT steel reinforcement bar of different dia. for R.C.C work including cleaning, cutting bending, placing in position and binding with 16 SWG paneled binding wire all as per the drawing, specification and instruction of site incharge.	Kg	6133.70				
9	Centering and shuttering with approved materials such as shuttering plywood or plain steel sheet etc. 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 all complete.	m ²	485.99				
10	First class brick masonry work in foundation and floor in cement mortar (1:4) with approved quality chimney bhatta bricks in perfect line and level with necessary scaffolding including wetting the bricks properly packing the joints and curing the works all complete.	m ³	70.89				
11	Plaster work						

11.1	12.5 mm thick cement plastering work in 1:4 cement mortar on wall (except ceiling) of good finish including cleaning and wetting the surface and curing the work all complete	m ²	686.62				
11.2	12.5 mm thick cement plastering work in 1:3 cement mortar on ceiling of good finish including cleaning and wetting the surface and curing the work all complete	m ²	164.28				
13	Aluminium Window/Ventilation Works						
	Supplying and fixing Aluminium sliding 3 track window of section of (101 x45 x1.5)mm with mosquito proof net and as per drawing and specification all complete.	m ²	10.26				
14	Wooden Door Works						
14.1	Supplying and fixing of 75x100 mm section Salwood chaukhat frame 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.	m ³	0.16				
14.2	Supplying and fixing flush door shutter of 38 mm thick sal wood frame with fixing 4mm thick teak plywood in both side including fixing with approved size of heavy	m ²	5.25				

	duty hinges, brass tower bolts, handle, mortice locking set as per design and instruction all complete.						
14.3	Supplying and fixing flush door shutter of 38 mm thick sal wood frame with fixing 4mm thick teak plywood one side and 0.45mm plain GI sheet otherside including fixing with approved size of heavy duty hinges, brass tower bolts, handle, locking set as per design and instruction all complete.(For toilet door)	m²	1.75				
15	Application of two coat weather coat after application of one coat primer on exterior wall	m²	227.17				
16	Application of two coat Plastic emulsion interior, after application of wall putty 2mm thick on interior wall and ceiling	m²	464.52				
17	Application of two coat readymade enamel after application of one coat primer on wooden surface	m²	16.80				
18	MS Collapsible gate including fitting and two coat enamel paint over one coat of red oxide all complete.	m²	7.39				
19	Stainless Steel railing with 2 inches circular pipe vertical post and hand rail with 1	Rm	7.40				



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	inches circular 3 layers horizontal pipe including intermediate supports at 2m interval.						
20	MS rolling shutter gate including fitting and two coat enamel paint over one coat of red oxide all complete.	m ²	8.63				
21	M.S.grill (20mmx 3mm flat) in windows and ventilation including one coat of red oxide all complete.	m ²	10.26				
22	Application of two coat Aluminium paint on metal Grill works	m ²	10.26				
23	Supplying and fitting 75 UPVC(NS 256/046) pipe of 4/kg/cm ² for drainage of rain water from roof to nearby surface drain all complete	LS	1.00				
		Sub Total(A)					
B	Supplying and installation of Electrical accessories in each floor as specified (for detail refer Annex-1)						
	Total Amount						
	13% VAT						
	Grand Total						

Signature: _____

Printed Name: _____

Designation: _____

Common Seal: _____

Date: _____

Place: _____





Handwritten signature or mark.

Annex-1
(Electrification Works)

S.No	Description of Works	Unit	Quantity	Remarks
	<u>Annex-1</u>			
B	Electrification Works (All accessories should be of standard quality confirming to relevant NS/IS/ISO standard)			
	Concealed Wiring			
1	10Amp. 5-two way switch+universal socket+Dimmer with pvc box	Set	3.00	
2	10Amp. 4-one way switch+universal socket with pvc box	Set	1.00	
3	16Amp. Power socket with switch with pvc box	Set	3.00	
4	Ceiling Fans Bajaj, Crompton, Usha or equivalent 60 watt,230v (36 inch)	Set	4.00	
5	6Amp. Bell Push bottom switch with pvc box	Nos	1.00	
6	Musical Door bell, 230v	Nos	1.00	
7	Ceiling mounted LED lamp with fixtures 5 watt,230v	Set	11.00	
8	Single phase Energy meter 5/30 Amp. 230v	Nos	1.00	
9	32Amp. Double pole main switch	Nos	1.00	
10	Wall mounted LED lamp with fixtures 9 watt,230v	Set	5.00	
11	Distribution box with 4 MCB (16Amp.-2 Nos,10Amp.-2 Nos) including Metal MCB Box	Set	1.00	
12	PVC insulated, copper wire of different size - 1/18, 3/22,3/20,7/22,7/20 for concealed wiring	lot	1.00	

PART 3 – Conditions of Contract and Contract Forms



Section VII. General Conditions of Contract

These General Conditions of Contract (GCC), read in conjunction with the Particular Conditions of Contract(PCC) and other documents listed therein, should be a complete document expressing fairly the rights and obligations of both parties.

These General Conditions of Contract have been developed on the basis of considerable international experience in the drafting and management of contracts, bearing in mind a trend in the construction industry towards simpler, more straightforward language.

The GCC can be used for both smaller admeasurement contracts and lump sum contracts.



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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.
- (c) The **Adjudicator** is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in GCC 23.
- (d) **Bank** means the financing institution **named in the PCC**.
- (e) **Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Bid.
- (f) **Compensation Events** are those defined in GCC Clause 42 hereunder.
- (g) The **Completion Date** is the date of completion of the Works as certified by the Project Manager, in accordance with GCC Sub-Clause 53.1.
- (h) 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 Sub-Clause 2.3 below.
- (i) The **Contractor** is the party whose Bid to carry out the Works has been accepted by the Employer.
- (j) The **Contractor's Bid** is the completed bidding document submitted by the Contractor to the Employer.
- (k) The **Contract Price** is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract.
- (l) **Days** are calendar days; months are calendar months.



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- (m) **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.
- (n) A **Defect** is any part of the Works not completed in accordance with the Contract.
- (o) The **Defects Liability Certificate** is the certificate issued by Project Manager upon correction of defects by the Contractor.
- (p) The **Defects Liability Period** is the period **named in the PCC** pursuant to Sub-Clause 34.1 and calculated from the Completion Date.
- (q) **Drawings** means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract, include calculations and other information provided or approved by the Project Manager for the execution of the Contract.
- (r) The **Employer** is the party who employs the Contractor to carry out the Works, **as specified in the PCC**.
- (s) **Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.
- (t) **"In writing"** or **"written"** means hand-written, type-written, printed or electronically made, and resulting in a permanent record;
- (u) The **Initial Contract Price** is the Contract Price listed in the Employer's Letter of Acceptance.
- (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 PCC**. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.
- (w) **Materials** are all supplies, including consumables, used by the Contractor for incorporation in the Works.
- (x) **Plant** is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.
- (y) The **Project Manager** is the person **named in the PCC** (or any other competent person appointed by the Employer and notified to the Contractor, to act in



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replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.

- (z) **PCC** means Particular Conditions of Contract.
- (aa) The **Site** is the area defined as such in the **PCC**.
- (bb) **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.
- (cc) **Specification** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.
- (dd) The **Start Date** is given in the **PCC**. 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.
- (ee) 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.
- (ff) **Temporary Works** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.
- (gg) A **Variation** is an instruction given by the Project Manager which varies the Works.
- (hh) The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the **PCC**.

- 2. Interpretation**
- 2.1 In interpreting these GCC, words indicating one gender include all genders. Words indicating the singular also include the plural and words indicating the plural also include the singular. 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 PCC**, 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



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following order of priority:

- (a) Agreement,
- (b) Letter of Acceptance,
- (c) Contractor's Bid,
- (d) Particular Conditions of Contract,
- (e) General Conditions of Contract, including Appendix,
- (f) Specifications,
- (g) Drawings,
- (h) Bill of Quantities,¹ and
- (i) any other document **listed in the PCC** 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 PCC**.
- 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) as a matter of law or official regulations, the Borrower's country prohibits commercial relations with that country; or
 - (b) 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 that country or any payments to any country, person, or entity in that country.
- 4. Project Manager's Decisions**
- 4.1 Except where otherwise specifically stated, the Project Manager shall decide contractual matters between the Employer and the Contractor in the role representing the Employer.
- 5. Delegation**
- 5.1 Otherwise **specified in the PCC**, the Project Manager may delegate any of his duties and responsibilities to other people, except to the Adjudicator, after notifying the Contractor, and may revoke any delegation after notifying the Contractor.
- 6. Communications**
- 6.1 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.
- 7. Subcontracting**
- 7.1 The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval

¹ In lump sum contracts, delete "Bill of Quantities" and replace with "Activity Schedule."



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of the Employer in writing. Subcontracting shall not alter the Contractor's obligations.

8. Other Contractors

8.1 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 PCC**. 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.

9. Personnel and Equipment

9.1 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.

9.2 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.

9.3 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 obstructive practice during the execution of the Works, then that employee shall be removed in accordance with Clause 9.2 above.

10. Employer's and Contractor's Risks

10.1 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.

11. Employer's Risks

11.1 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



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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.

11.2 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.

12. Contractor's Risks

12.1 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.

13. Insurance

13.1 The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles **stated in the PCC** 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.

13.2 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 types and proportions of currencies required to rectify the loss or damage incurred.



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- 13.3 If the Contractor does not provide any of the policies and certificates required, the Employer may effect 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.
- 13.4 Alterations to the terms of an insurance shall not be made without the approval of the Project Manager.
- 13.5 Both parties shall comply with any conditions of the insurance policies.
- 14. Site Data**
- 14.1 The Contractor shall be deemed to have examined any Site Data **referred to in the PCC**, supplemented by any information available to the Contractor.
- 15. Contractor to Construct the Works**
- 15.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings.
- 16. The Works to Be Completed by the Intended Completion Date**
- 16.1 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 by the Intended Completion Date.
- 17. Approval by the Project Manager**
- 17.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, for his approval.
- 17.2 The Contractor shall be responsible for design of Temporary Works.
- 17.3 The Project Manager's approval shall not alter the Contractor's responsibility for design of the Temporary Works.
- 17.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.
- 17.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Project Manager before this use.
- 18. Safety**
- 18.1 The Contractor shall be responsible for the safety of all activities on the Site.
- 19. Discoveries**
- 19.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the



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- Employer. The Contractor shall notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them.
- 20. Possession of the Site**
- 20.1 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 PCC**, the Employer shall be deemed to have delayed the start of the relevant activities, and this shall be a Compensation Event.
- 21. Access to the Site**
- 21.1 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.
- 22. Instructions, Inspections and Audits**
- 22.1 The Contractor shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is located.
- 22.2 The Contractor shall keep, and shall make all reasonable efforts to cause its Subcontractors and subconsultants 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.
- 22.3 The Contractor shall permit and shall cause its Subcontractors and subconsultants to permit, the Bank and/or persons appointed by the Bank to inspect the Site and/or the accounts and records relating to the performance of the Contract and the submission of the bid, and to have such accounts and records audited by auditors appointed by the Bank if requested by the Bank. The Contractor's and its Subcontractors' and subconsultants' attention is drawn to Sub-Clause 25.1 which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under Sub-Clause 22.2 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).
- 23. Appointment of the Adjudicator**
- 23.1 The Adjudicator shall be appointed jointly by the Employer and the Contractor, at the time of the Employer's issuance of the Letter of Acceptance. If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator, the Employer will request the Appointing Authority **designated in the PCC**, to appoint the Adjudicator within 14 days of receipt of such request.
- 23.2 Should the Adjudicator resign or die, or should the Employer and the Contractor agree that the Adjudicator is not functioning in



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accordance with the provisions of the Contract, a new Adjudicator shall be jointly appointed by the Employer and the Contractor. In case of disagreement between the Employer and the Contractor, within 30 days, the Adjudicator shall be designated by the Appointing Authority **designated in the PCC** at the request of either party, within 14 days of receipt of such request.

24. Procedure for Disputes

24.1 If the Contractor believes that a decision taken by the Project Manager was either outside the authority given to the Project Manager by the Contract or that the decision was wrongly taken, the decision shall be referred to the Adjudicator within 14 days of the notification of the Project Manager's decision.

24.2 The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.

24.3 The Adjudicator shall be paid by the hour at the **rate specified in the PCC**, together with reimbursable expenses of the types **specified in the PCC**, and the cost shall be divided equally between the Employer and the Contractor, whatever decision is reached by the Adjudicator. Either party may refer a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator's written decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator's decision shall be final and binding.

24.4 The arbitration shall be conducted in accordance with the arbitration procedures published by the institution named and in the place **specified in the PCC**.

25. Corrupt and Fraudulent Practices

25.1 The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Appendix to the GCC.

25.2 The Employer requires the Contractor to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the bidding process or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.

B. Time Control

26. Program

26.1 Within the time **stated in the PCC**, 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



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Works. In the case of a lump sum contract, the activities in the Program shall be consistent with those in the Activity Schedule.

- 26.2 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.
- 26.3 The Contractor shall submit to the Project Manager for approval an updated Program at intervals no longer than the period **stated in the PCC**. If the Contractor does not submit an updated Program within this period, the Project Manager may withhold the amount **stated in the PCC** 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 14 days of being instructed to by the Project Manager.
- 26.4 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.

27. Extension of the Intended Completion Date

- 27.1 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.
- 27.2 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. 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.

28. Acceleration

- 28.1 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.



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- 28.2 If the Contractor's priced proposals for an acceleration are accepted by the Employer, they are incorporated in the Contract Price and treated as a Variation.
- 29. Delays Ordered by the Project Manager**
- 29.1 The Project Manager may instruct the Contractor to delay the start or progress of any activity within the Works.
- 30. Management Meetings**
- 30.1 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.
- 30.2 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.
- 31. Early Warning**
- 31.1 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.
- 31.2 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

- 32. Identifying Defects**
- 32.1 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.
- 33. Tests**
- 33.1 If the Project Manager instructs the Contractor to carry out a test not specified in the Specification to check whether any work has



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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.

- 34. Correction of Defects**
- 34.1 The Project Manager shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is **defined in the PCC**. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- 34.2 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.
- 35. Uncorrected Defects**
- 35.1 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

- 36. Contract Price**
- 36.1 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.
- 37. Changes in the Contract Price**
- 37.1 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 1 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change. The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Employer.
- 37.2 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.
- 38. Variations**
- 38.1 All Variations shall be included in updated Programs produced by the Contractor.
- 38.2 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



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Manager and before the Variation is ordered.

- 38.3 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.
- 38.4 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.
- 38.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.
- 38.6 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 Sub-Clause 39.1 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.

**39. Cash Flow
Forecasts**

- 39.1 When the Program, is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast. The cash flow forecast shall include different currencies, as defined in the Contract, converted as necessary using the Contract exchange rates.

**40. Payment
Certificates**

- 40.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously.
- 40.2 The Project Manager shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor.
- 40.3 The value of work executed shall be determined by the Project Manager.
- 40.4 The value of work executed shall comprise the value of the quantities of work in the Bill of Quantities that have been completed.
- 40.5 The value of work executed shall include the valuation of



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Variations and Compensation Events.

40.6 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.

41. Payments

41.1 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 28 days of the date of each certificate. If the Employer makes a late payment, the Contractor shall be paid interest 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 at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made.

41.2 If an amount certified is increased in a later certificate or as a result of an award by the Adjudicator or 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.

41.3 Unless otherwise stated, all payments and deductions shall be paid or charged in the proportions of currencies comprising the Contract Price.

41.4 Items of the Works for which no rate or price has been entered in shall not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

42. Compensation Events

42.1 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 Sub-Clause 20.1.
- (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



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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.

42.2 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.

42.3 As soon as information demonstrating the 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.

42.4 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



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cooperated with the Project Manager.

43. Tax

43.1 The Project Manager shall adjust the Contract Price if taxes, duties, and other levies are changed between the date 28 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 Clause 44.

44. Currencies

44.1 Where payments are made in currencies other than the currency of the Employer's country **specified in the PCC**, the exchange rates used for calculating the amounts to be paid shall be the exchange rates stated in the Contractor's Bid.

45. Price Adjustment

45.1 Prices shall be adjusted for fluctuations in the cost of inputs only if **provided for in the PCC**. 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 in each currency. A separate formula of the type specified below applies to each Contract currency:

$$P_c = A_c + B_c I_{mc}/I_{oc}$$

where:

P_c is the adjustment factor for the portion of the Contract Price payable in a specific currency "c."

A_c and B_c are coefficients² **specified in the PCC**, representing the nonadjustable and adjustable portions, respectively, of the Contract Price payable in that specific currency "c;" and

I_{mc} is the index prevailing at the end of the month being invoiced and I_{oc} is the index prevailing 28 days before Bid opening for inputs payable; both in the specific currency "c."

45.2 If the value of the index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment made in the next payment certificate. The index value shall be deemed to take account of all changes in cost due to fluctuations

² The sum of the two coefficients A_c and B_c should be 1 (one) in the formula for each currency. Normally, both coefficients shall be the same in the formulae for all currencies, since coefficient A, for the nonadjustable portion of the payments, is a very approximate figure (usually 0.15) to take account of fixed cost elements or other nonadjustable components. The sum of the adjustments for each currency are added to the Contract Price.



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in costs.

46. Retention

46.1 The Employer shall retain from each payment due to the Contractor the proportion **stated in the PCC** until Completion of the whole of the Works.

46.2 Upon the issue of a Certificate of Completion of the Works by the Project Manager, in accordance with GCC 51.1, half the total amount retained shall be repaid to the Contractor and half when the Defects Liability Period has passed and the Project Manager has certified that all Defects notified by the Project Manager to the Contractor before the end of this period have been corrected. The Contractor may substitute retention money with an “on demand” Bank guarantee.

47. Liquidated Damages

47.1 The Contractor shall pay liquidated damages to the Employer at the rate per day **stated in the PCC** 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 PCC**. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor’s liabilities.

47.2 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 Sub-Clause 41.1.

48. Bonus

48.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day **stated in the PCC** 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.

49. Advance Payment

49.1 The Employer shall make advance payment to the Contractor of the amounts **stated in the PCC** by the date **stated in the PCC**, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer in amounts and currencies 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.



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Interest shall not be charged on the advance payment.

49.2 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.

49.3 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the 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.

50. Securities

50.1 The Performance Security 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 PCC**, by a bank or surety acceptable to the Employer, and denominated in the types and proportions of the currencies in which the Contract Price is payable. The Performance Security shall be valid until a date 28 days from the date of issue of the Certificate of Completion in the case of a Bank Guarantee, and until one year from the date of issue of the Completion Certificate in the case of a Performance Bond.

51. Dayworks

51.1 If applicable, the Dayworks rates in the Contractor's Bid shall be used only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.

51.2 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.

51.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

52. Cost of Repairs

52.1 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.



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E. Finishing the Contract

- 53. Completion** 53.1 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 whole of the Works is completed.
- 54. Taking Over** 54.1 The Employer shall take over the Site and the Works within seven days of the Project Manager's issuing a certificate of Completion.
- 55. Final Account** 55.1 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 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 56 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.
- 56. Operating and Maintenance Manuals** 56.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates **stated in the PCC**.
- 56.2 If the Contractor does not supply the Drawings and/or manuals by the dates **stated in the PCC** pursuant to GCC Sub-Clause 56.1, or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount **stated in the PCC** from payments due to the Contractor.



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57. Termination

57.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

57.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following:

- (a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Project Manager;
- (b) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 days;
- (c) the Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
- (d) a payment certified by the Project Manager is not paid by the Employer to the Contractor within 84 days of the date of the Project Manager's certificate;
- (e) 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;
- (f) the Contractor does not maintain a Security, which is required;
- (g) 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 PCC**; or
- (h) if the Contractor, in the judgment of the Employer, has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices, in competing for or in executing the Contract, then the Client may, after giving fourteen (14) days written notice to the Contractor, terminate the Contract and expel him from the Site.

57.3 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 Sub-Clause 56.2 above, the Project Manager shall decide whether the breach is fundamental or not.

57.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.

57.5 If the Contract is terminated, the Contractor shall stop work



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immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

- 58. Payment upon Termination**
- 58.1 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 and less the percentage to apply to the value of the work not completed, as **specified in the PCC**. 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.
- 58.2 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.
- 59. Property**
- 59.1 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.
- 60. Release from Performance**
- 60.1 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.
- 61. Suspension of Bank Loan or Credit**
- 61.1 In the event that the Bank suspends the Loan or Credit 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 Bank's suspension notice.
 - (b) If the Contractor has not received sums due it within the 28 days for payment provided for in Sub-Clause 40.1, the Contractor may immediately issue a 14-day termination notice.



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APPENDIX TO GENERAL CONDITIONS

Bank's Policy- Corrupt and Fraudulent Practices

(text in this Appendix shall not be modified)

Guidelines for Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, dated January 2011:

“Fraud and Corruption:

1.16 It is the Bank's policy to require that Borrowers (including beneficiaries of Bank loans), bidders, suppliers, contractors and their agents (whether declared or not), sub-contractors, sub-consultants, service providers or suppliers, and any personnel thereof, observe the highest standard of ethics during the procurement and execution of Bank-financed contracts.³ In pursuance of this policy, the Bank:

- (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (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;⁴;
 - (ii) “fraudulent practice” 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;⁵
 - (iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;⁶
 - (iv) “coercive practice” 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;⁷
 - (v) “obstructive practice” is

³In this context, any action to influence the procurement process or contract execution for undue advantage is improper.

⁴ For the purpose of this sub-paragraph, “another party” refers to a public official acting in relation to the procurement process or contract execution. In this context, “public official” includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

⁵ For the purpose of this sub-paragraph, “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

⁶ For the purpose of this sub-paragraph, “parties” refers to participants in the procurement process (including public officials) attempting either themselves, or through another person or entity not participating in the procurement or selection process, to simulate competition or to establish bid prices at artificial, non-competitive levels, or are privy to each other's bid prices or other conditions.

⁷ For the purpose of this sub-paragraph, “party” refers to a participant in the procurement process or contract execution.



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- (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 Bank 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 Bank's inspection and audit rights provided for under paragraph 1.16(e) below.
- (b) will reject a proposal for award if it determines that the bidder recommended for award, or any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- (c) will declare misprocurement and cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement or the implementation of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
- (d) will sanction a firm or individual, at any time, in accordance with the prevailing Bank's sanctions procedures,⁸ including by publicly declaring such firm or individual ineligible, either indefinitely or for a stated period of time: (i) to be awarded a Bank-financed contract; and (ii) to be a nominated⁹;
- (e) will require that a clause be included in bidding documents and in contracts financed by a Bank loan, requiring bidders, suppliers and contractors, and their sub-contractors, agents, personnel, consultants, service providers, or suppliers, to permit the Bank to inspect all accounts, records, and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Bank.”

⁸ A firm or individual may be declared ineligible to be awarded a Bank financed contract upon: (i) completion of the Bank's sanctions proceedings as per its sanctions procedures, including, inter alia, cross-debarment as agreed with other International Financial Institutions, including Multilateral Development Banks, and through the application the World Bank Group corporate administrative procurement sanctions procedures for fraud and corruption; and (ii) as a result of temporary suspension or early temporary suspension in connection with an ongoing sanctions proceeding. See footnote 14 and paragraph 8 of Appendix 1 of these Guidelines.

⁹ A nominated sub-contractor, consultant, manufacturer or supplier, or service provider (different names are used depending on the particular bidding document) is one which has either been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.



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Section VIII. Particular Conditions of Contract

A. General	
GCC 1.1 (d)	The financing institution is: <i>The International Development Association (IDA, World Bank).</i>
GCC 1.1 (s)	The Employer is: <i>Nepal Electricity Authority (NEA).</i>
GCC 1.1 (v)	The Intended Completion Date for the whole of the Works shall be 6 months from the Effective Date
GCC 1.1 (y)	The Project Manager is <i>Mr. Radhe Sharan Mahato, Project Manager, Nepal India Electricity Transmission and Trade Project, Nepal Electricity Authority, Kharipati, Bhaktapur, Nepal. Telephone: +977 1 6616932 Facsimile number: +977 1 6616660 Electronic mail address: mahators.nea@gmail.com</i>
GCC 1.1 (aa)	The <i>Site</i> means the land and other places upon which the Facilities are to be installed, and such other land or places as may be specified in the Contract as forming part of the Site. The Site is located at Dhalkebar Substation, Dhanusa District and is defined in drawings No. <i>as attached.</i>
GCC 1.1 (dd)	The Start Date shall be: The Effective Date upon which the period until the Time for Completion of the Facilities shall be counted from, is the date when all of the following conditions have been fulfilled: (a) This Contract Agreement has been duly executed for and on behalf of the Employer and the Contractor; (b) The Contractor has submitted to the Employer the performance security and the advance payment guarantee; (c) The Employer has paid the Contractor of the advance payment Each party shall use its best efforts to fulfill the above conditions for which it is responsible as soon as practicable. Despite what so ever stated above, the Time for Completion of the Facilities shall, at the latest, be counted down from 30 days from the date of Signing of the



Radhe Sharan Mahato

	Contract Agreement.
GCC 1.1 (hh)	The Works consist of <i>Construction of Store Building at Dhalkebar Substation as defined in Bidding Data and Scope of Work.</i>
GCC 1.1 (hi)	<p><i>Add following terms and definitions after 1.1 (hh)</i></p> <p>The terms “Facilities” and “Works” are used interchangeably.</p> <p>The terms “Final Acceptance Certificate” and “Defects Liability Certificate” are used interchangeably.</p> <p>Add new definition as follows:</p> <p>Final Acceptance means the acceptance by the Employer of the Facilities, which certifies the Contractor’s fulfillment of the entire Contract. The “Final Acceptance Certificate” shall be issued to the Contractor after the expiry of the last Defect Liability Period provided the Contractor has also fulfilled all its obligations towards the Income Tax Department and Customs Department of Government of Nepal.</p>
GCC 2.2	Sectional Completions are: <i>None</i>
GCC 2.3(i)	<p>The following documents also form part of the Contract:</p> <p><i>1. Minutes of Meetings as agreed upon</i> <i>2. All Addenda in the bidding procedure</i></p>
GCC 3.1	<p>The language of the contract is <i>English</i></p> <p>The law that applies to the Contract is the law of <i>Nepal</i>.</p>
GCC 5.1	The Project manager <i>may</i> delegate any of his duties and responsibilities.
GCC 8.1	Schedule of other contractors: <i>None</i>
GCC 13.1	<p>The minimum insurance amounts and deductibles shall be:</p> <p>Minimum cover: 115 % of the value of the works and material as per the contract price. Maximum deductible: NRs.100,000 (NRs. One Hundred Thousand only).</p> <p>(b) For loss or damage to Equipment:</p> <p>Minimum cover: NRs. 5,000,000 (NRs. Five million only). Maximum deductible: NRs. 25,000.00 (NRs. Twenty five Thousand only)</p> <p>(c) for loss or damage to property (except the Works, Plant, Materials, and Equipment) in connection with Contract:</p> <p>Minimum cover: NRs. 1,000,000 (NRs. One million only) with unlimited numbers of occurrence.</p>



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	<p>Maximum deductible: NRs. 25,000 (NRs. Twenty Five Thousand only)</p> <p>(d) for personal injury or death:</p> <p>(i) of the Contractor's employees: As per the Labour Act of Nepal.</p> <p>(ii) of other people including Employer's staff and third parties: NRs. 500,000 (NRs. Five Hundred Thousand only) per person for 5 persons with unlimited number of occurrences.</p>
GCC 14	Site Data are: <i>None</i>
GCC 20.1	The Site Possession Date(s) shall be: <i>As agreed during Contract Signing.</i>
GCC 23	Clause GCC 23 should be read as Appointment of the Adjudicator/ DRC Members.
GCC 23.1 & GCC 23.2	<p>Appointing Authority for the Adjudicator: <i>Nepal Council of Arbitration (NEPCA).</i></p> <p>Note: If the Adjudicator is identified an agreed during the Contract agreement, insert the name of Adjudicator or DRC members. If not identified, the Adjudicator or DRC members shall have to be agreed and appointed whenever dispute arises.</p>
GCC 24.3	Hourly rate and types of reimbursable expenses to be paid to the Adjudicator: <i>As agreed during formation of DRC.</i>
GCC 24.4	Institution whose arbitration procedures shall be used: <i>Nepal Council of Arbitration (NEPCA)</i>
B. Time Control	
GCC 26.1	The Contractor shall submit for approval a Program for the Works within 30 days from the date of the Letter of Acceptance.
GCC 26.3	<p>The period between Program updates is 60 days.</p> <p>The amount to be withheld for late submission of an updated Program is:</p> <p>All due bills shall be withheld.</p>
C. Quality Control	
GCC 34.1	The Defects Liability Period is: <i>365 days.</i>
D. Cost Control	
GCC 41.1	<i>Delete Sub-Clauses 41.1,41.2 and 41.3 and replace with the following:</i>



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	Payment shall be paid as specified in Section VI – Work Requirement “Specification”
GCC 42.1	<i>Delete sub-clauses 42.1 (e), (f), (g) & (i)</i>
GCC 42.3	<p><i>Delete Sub-Clauses 42.3 entirely and replace with the following:</i></p> <p>Within 15 days of the occurrence of the compensation event the Contractor shall claim for the same with all details on that. Upon receipt of such information the Project Manager shall assess the situation and may ask or the detail on the estimate submitted by the Contractor. If the Contractor’s claim (including estimates therein) is deemed unreasonable, the Project Manager shall make reasonable adjustment on it.</p> <p>The Employer will take decision on the request for the Extension of Time for Completion or for adjustment of the Contract price based on assessment made by Project Manager.</p>
GCC 44.1	The currency of the Employer’s country is: <i>Nepalese Rupees (NRs.)</i> .
GCC 45	Price Adjustment in accordance with GCC Clause 45 is not applied as this is a fixed price Contract.
GCC 45.1	The Contract <i>is not</i> subject to price adjustment in accordance with GCC Clause 45, and the following information regarding coefficients <i>does not</i> apply.
GCC 46.1	The proportion of payments retained is: <i>5 (Five) Percent</i> .
GCC 47.1	The liquidated damages for the whole of the Works are <i>0.05 % of the Contract price per each day per delay</i> . The maximum amount of liquidated damages for the whole of the Works is <i>10 (ten)%</i> of the final Contract Price.
GCC 48.1	The Bonus for the whole of the Works is <i>0 (zero)%</i> per day. The maximum amount of Bonus for the whole of the Works is <i>0 (zero)%</i> of the final Contract Price.
GCC 49.1	The Advance Payments shall be: <i>10 (Ten)% of the initial Contract price excluding the provisional sums, day works and VAT and shall be made to the Contractor upon submission of acceptable Bank Guarantee for advance payment and shall be paid to the Contractor no later than the date as agreed upon during Contract Agreement</i> .
GCC 50.1	The Performance Security shall be for the following minimum amounts equivalent as a percentage of the Contract Price: 5% (ITB Sub Clause 42.1) and an additional amount of 8% of the Contract price if the Employer has increased the Performance Security amount pursuant to ITB Sub Clause 35.5.

	The standard form(s) of Performance Security acceptable to the Employer shall be “ <i>an Unconditional Bank Guarantee</i> ” acceptable to the Employer of the type presented in Section X of the Bidding Documents.
E. Finishing the Contract	
GCC 56.1	The date by which operating and maintenance manuals are required is <i>NA</i> The date by which “as built” drawings are required is: <i>immediately after completion of the work.</i>
GCC 56.2	The amount to be withheld for failing to produce “as built” drawings and/or operating and maintenance manuals by the date required in GCC 58.1 is <i>NA</i> .
GCC 57.2 (g)	The maximum number of days is: <i>consistent with Clause 47.1 on liquidated damages.</i>
GCC 58.1	The percentage to apply to the value of the work not completed, representing the Employer’s additional cost for completing the Works, is fifty (50) <i>percentage.</i>



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Section IX - Contract Forms

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

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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.]



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Letter of Acceptance

[on letterhead paper of the Employer]

..... [date].

To: [name and address of the Contractor]

Subject: [Notification of Award Contract No].

This is to notify you that your Bid dated [insert date] for execution of the
. [insert name of the contract and identification number, as given in the Appendix to Bid] for
the Accepted Contract Amount of [insert amount in numbers and words and name of
currency], as corrected and modified in accordance with the Instructions to Bidders is hereby
accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with
the Conditions of Contract, using for that purpose the of the Performance Security Form
included in Section X (Contract Forms) of the Bidding Document.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Contract Agreement



Handwritten signature

Contract Agreement

THIS AGREEMENT made theday 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 therein,

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) Agreement,
 - (b) Letter of Acceptance,
 - (c) Contractor’s Bid,
 - (d) Particular Conditions of Contract,
 - (e) General Conditions of Contract, including Appendix;
 - (f) Specifications,
 - (g) Drawings;
 - (h) Bill of Quantities, and
 - (i) Any other document **listed in the PCC** as forming part of the Contract.
 - (j) Any other documents shall be added here
3. In consideration of the payments to be made by the Employer to the Contractor as specified 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 *[name of the borrowing country]*.on the day, month and year specified above.

Signed by: _____
for and on behalf of the Employer

Signed by: _____
for and on behalf the Contractor

in the presence
of: _____
Witness, Name, Signature, Address, Date

in the presence
of: _____
Witness, Name, Signature, Address, Date



Vinobab

Performance Security

(On letterhead paper of the 'A' class commercial Bank)

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

Beneficiary: **Name and Address of Employer**

Date:

Performance Guarantee No.:.....

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

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

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

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

.....

Seal of Bank and Signature(s)

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

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

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



Vimabab

Advance Payment Security

(On letterhead paper of the 'A' class commercial Bank)

..... *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.....*name of the Contractor*.....(hereinafter called "the Contractor") has entered into Contract No.....*reference number of the Contract*.....dated with you, for the execution of ... *name of contract and brief description of Works* (hereinafter called "the Contract").

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

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

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

Seal of Bank and Signature(s)

Note:

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

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

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



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