

**NEPAL ELECTRICITY AUTHORITY
(A GOVERNMENT OF NEPAL UNDERTAKING)**



**DISTRIBUTION AND CONSUMER SERVICE DIRECTORATE
BIRATNAGAR REGIONAL OFFICE
TAPLEJUNG DISTRIBUTION CENTER
TAPLEJUNG**

**BID DOCUMENT
FOR
OFFICE BUILDING CONSTRUCTION WORKS
at
Taplejung Dcs.**

TENDER NO: NEA-TPLGDC-2074/075-01 Tender

Nepal Electricity Authority
Distribution and Consumer Service Directorate
Biratnagar Regional Office
Taplejung Distribution Centre



प्रो. क. म. शर्मा

Table of Contents

Section I.	Invitation to Bids	1
Section II.	Instruction to Bidders, Bidding Data	2
Section III.	Special Instruction to Bidders for e-Bidding	11
Section IV.	Sample Forms of Bid, Eligibility Information, Letter of Acceptance And Agreement	14
Section V.	General Conditions of Contract (GCC)	20
Section VI.	Special Conditions of Contract (SCC)	43
Section VII.	Technical Specifications	46
Section VIII.	Drawings	100
Section IX.	Bill of Quantities	105
Section X	Sample Forms of Securities	113
Section XI.	Declaration Form (For E-bidding)	117



Section I. Invitation to Bids

बोलपत्र/दरभाउपत्र आह्वानको सूचना

(गोरखापत्र दैनिकमा सूचना प्रकाशित मिति : २०७४।०८।१२)

यस कार्यालय अन्तर्गतका तपसिलका वितरण केन्द्रहरूको लागि आवश्यक निम्नलिखित कार्य बोलपत्र/दरभाउपत्रको माध्यमबाट गराउनु पर्ने भएकोले सम्बन्धित कार्यको लागि नेपाल सरकारबाट इजाजत प्राप्त, मूल्य अभिवृद्धि कर (VAT, PAN) मा दर्ता भएका, आयकर तिरेका, रजिस्टर्ड कम्पनी/आपूर्तिकर्ता वा अख्तियार प्राप्त फर्मबाट नियमानुसार तोकिएको सर्तको अधिनमा रही कार्य गर्न बोलपत्र/दरभाउपत्र आह्वान गरिएको सूचना सम्बन्धित कार्यालयको सूचना पाटीमा टाँस गरिएको तथा ने.वि.प्रा.को वेबसाइट eproc.nea.org.np मा राखिएको छ । बोलपत्र/दरभाउपत्रसम्बन्धी अन्य थप कुरा बुझ्नु परेमा सम्बन्धित कार्यालयमा कार्यालय समयभित्र सम्पर्क राख्न सकिनेछ ।

सि. नं.	बोलपत्र / दरभाउपत्र नम्बर	कामको विवरण	बोलपत्र / दरभाउपत्रको मूल्य रु.	बोलपत्र / दरभाउपत्रको जमानत रु.	निर्माण कार्यको लागत अनुमान रु.	बोलपत्र / दरभाउपत्र खरिद गर्ने अन्तिम मिति र समय	बोलपत्र / दरभाउपत्र दाखिला गर्ने अन्तिम मिति र समय	बोलपत्र / दरभाउपत्र खरिद गर्ने कार्यालयको बैंक र खाता नं.	विडुवण्डु जम्मा गर्ने कार्यालयको बैंक र खाता नं.	बोलपत्र / दरभाउपत्र खोलिने मिति र समय	सम्बन्धित कार्यालय
१	NEA-TDC-2074/075-02,SQ	Transportation of Steel Tubular Pole	१,०००।-	३८,५००।००	-	२०७४।०८।२६ गते कार्यालय समयसम्म	२०७४।०८।२७ गते दिनको १२:०० बजेसम्म	नेपाल बैंक लि., तेहथुम ०५४००१०१२३८९६०००००१	नेपाल बैंक लि., तेहथुम ०५४००१०१२३९८००००००१	२०७४।०८।२७ गते दिनको १४:०० बजे	तेहथुम वितरण केन्द्र ०२६-४१०१११
२	NEA-TPLGDC-2074/075-01,Tender	Office Building Construction works at Taplejung DC	३,०००।-	२,४०,०००।००	९४,५१,६६०।०९	२०७४।०९।१२ गते कार्यालय समयसम्म	२०७४।०९।१३ गते दिनको १२:०० बजेसम्म	नबिल बैंक विराटनगर ०७०६०१७५०००१८	नबिल बैंक विराटनगर ०७०६०१७५०००१६	२०७४।०९।१३ गते दिनको १४:०० बजे	विराटनगर क्षेत्रीय कार्यालय ०२१-४३६३०६



नेपाल विद्युत् प्राधिकरण

विराटनगर क्षेत्रीय कार्यालय, फोन ०२१-४३६३०६



१ फुलक हल

Section II. Instructions to Bidders

A. General

1. **Scope of Works** The Employer invites bids for the contraction of works as detailed in attached specifications, drawings and the bill of quantities provided herein. The successful Bidder is expected to complete the works as mentioned in the Bidding Data.
2. **Eligible Bidder** This Invitation for Bids is open to all registered Bidders with qualifications as described in the Bidding Data.
3. **One Bid per Bidder** Each Bidder shall submit only one bid, either individually or as a partner in a joint venture. A Bidder who submits or participates in more than one bid shall cause all the proposals with the Bidder's participation to be disqualified. A firm may participate in more than one bid only as a subcontractor.
4. **Cost of Bidding** The Bidder shall bear all costs associated with the preparation and submission of his bid and the Employer shall in no case be liable for those costs.
5. **Site Visit** The Bidder at his own cost, responsibility and risk may visit the site of the works and acquire all necessary information for preparing the bid and entering into a contract for construction of the works.

B. Bidding Documents

6. **Content of Bidding Documents** The Bidding Documents comprise the documents listed below:
Section
 - I. Invitation for Bids
 - II. Instructions to Bidders
 - III. Sample Forms of Bid, Letter of Acceptance and Agreement
 - IV. General Conditions of Contract (GCC)
 - V. Special Conditions of Contract (SCC)
 - VI. Technical Specifications
 - VII. Drawings
 - VIII. Bill of Quantities
 - IX. Sample Forms of Securities
7. **Clarification of Bidding Documents** A prospective Bidder may request clarification on the bidding documents in writing and the Employer shall respond to such request. Copies of the response shall be forwarded to all the purchasers of the bidding documents.

C. Preparation of Bids

8. **Language of Bid** All documents relating to the bid shall be in English or in Nepali.
9. **Documents Comprising Bid** The bid by the Bidder shall comprise the following:
 - a. Bid and Qualification/ Eligibility Information
 - b. Bid Security
 - c. Priced Bill of Quantities
 - d. Rate Analysis (optional at request of Employer)

- 10. Bid Prices** The contract shall be for the whole works described in scope of works based on the priced Bill of Quantities submitted by the Bidder. The Bidder shall fill in rates and prices for all items of the works in Nepali Rupees. Items for which no rate or price is entered shall be deemed covered by the other rates and prices in the Bill of Quantities and shall not be paid by the Employer.
- All duties, taxes and other levies payable by the contractor under the contract shall be included in the rates, prices and total Bid Price submitted by the Bidder.
- 11. Bid Validity** The bid shall remain valid for the period specified in the Bidding Data.
- 12. Bid Security** The Bidder shall furnish a Bid Security in Nepali Rupees in the amount specified in the Bidding Data. The Bid Security shall remain valid for a period of 30 days beyond the original validity period for bid and any period of extension subsequently requested by the employer.
- The Bid Security shall be in the form of a bank guarantee from a bank acceptable to the Employer or a cash voucher deposited in the Bank Account of the Employer specified in the Bidding Data.
- 13. Format and Signing of Bids** One original and one duplicate copy of the bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorised to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the Bidding Data 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. Any entries or amendments including alternations, additions or corrections made shall be initialled by the same authorized person.
- D. Submission of Bids**
- 14. Sealing and Marking of Bids** The Bidder shall submit one original and a duplicate copy of the bid. These bids shall be placed in sealed envelopes. Both the sealed envelopes shall be placed in an outer envelope which shall also be sealed. The inner envelopes shall duly be marked as 'Original' and 'Copy'. The envelopes shall be addressed to the Employer at the address provided in the Bidding Data and bear the name and identification number of the contract.
- 15. Pre-Bid Meeting** A Pre-Bid meeting if provided for in the Bidding Data shall be held at least 10 days before the bid submission date at the place, date and time as mentioned in the Bidding Data. Any amendment to be made in the Bid subsequent to the Pre-bid meeting shall be issued within 5 days of the meeting and the Addendum shall be circulated to all the purchasers of the Bidding Document, The Addendum thus issued shall be a part of the Bidding document.
- 16. Deadline for Submission of Bids** Bids shall be delivered to the Employer at the address no later than the time and date specified in the Bidding Data.
- 17. Late Bids** Any bid received by the Employer after the deadline shall not be accepted and shall be returned unopened to the Bidder.
- 18. Modification and Withdrawal of Bids**
- (i) Bids submitted in hard Copy
 - a) Bidders may withdraw or modify its bids by sending a written notice in a sealed envelope, duly signed by an authorized representative, and shall include a copy of the authorization before 24 hours prior to the

last deadline of submission of bid. The corresponding modification of the bid must accompany the respective written notice. All notices must be: received by the Employer 24 hours prior to the deadline prescribed for submission of bids, in accordance with ITB 16.

E-submitted bids.

a) Bidder may submit modification or withdrawal prior to the deadline prescribed for submission of bids through e-GP system by using the forms and instructions provided by the system. Once a Bid is withdrawn, bidder shall not be able to submit another bid for the same bid.

In case of bids submitted in hard copy no bid shall be withdrawn or modified in the interval between 24 hours prior time of 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.

In case of e-submitted bids no bids shall be withdrawn or modified in the interval between deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof.

E.

Bid Opening and Evaluation

19. Bid Opening

The Employer shall open the bids in the presence of the Bidders' representatives who choose to attend at the time and in the place specified in the Bidding Data.

The Bidders' names, the Bid Prices, the total amount of each bid, any discounts, bid modifications and withdrawals, the presence or absence of Bid Security, difference of rate in words and figures, quoted price for alternate technical specification if proposed, whether the Bid Form has signature of the bidder or authorized representative, corrections/effacement or obliteration in bidding document, any remarks made by the bidder in the Bid Form, details_of rates if requested and such other details as the Employer may consider appropriate shall be announced by the Employer at the opening.

The Employer shall prepare and provide minutes of the bid opening including the information disclosed to those present.

20. Process to be Confidential

Information relating to the examination, clarification, evaluation and comparison of bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced.

21. Clarification of Bids and Contacting the Employer

21.1 To assist in the examination, evaluation and comparison of Bids, the Employer may, at the Employer's discretion, ask any Bidder for clarification of the Bidder's bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by facsimile, but no change in the price or substance of the bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids in accordance with Clause 23.

21.2 Subject to Sub-Clause 21.1, no Bidder shall contact the Employer on any matter relating to his bid from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to



the notice of the Employer, he should do so in writing.

21.3 Any efforts by the Bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidder's bid.

22. Examination of Bids and Determination of Responsiveness

22.1 Prior to the detailed evaluation of Bids, the Employer shall determine whether each bid (a) meets the eligibility criteria defined in Clause 2; (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the Bidding documents.

22.2 A substantially responsive bid is one which conforms to all the terms, conditions, and specifications of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.

22.3 If a bid is not substantially responsive, it shall be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

23. Correction of Errors

23.1 Bids determined to be substantially responsive shall be checked by the Employer for any arithmetic errors. Errors shall be corrected by the Employer as follows:

a where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern; and

b where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted shall govern, unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted shall govern, and the unit rate shall be corrected.

23.2 The amount stated in the bid shall be adjusted by the Employer in accordance with the above procedure for the correction of errors and, with the concurrence of the Bidder, shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount, the bid shall be rejected and the Bid Security may be forfeited.

24. Evaluation and Comparison of Bids

24.1 The Employer shall evaluate and compare only the Bids determined to be substantially responsive in accordance with Clause 23.

24.2 Further the employer shall evaluate :

- a) Whether the construction work plan, work performance schedule and mobilization period is consistent with the requirement of the bidding document or not,
- b) Whether the quoted item unit rates in the Bill of quantities are reliable or not,
- c) Whether or not the quoted price is unbalanced due to unnaturally high rates quoted by the bidder for work items to be completed in the initial stages of the contract or for work items whose quantities are assumed by the bidder to be underestimated.



- 24.3 In evaluating the Bids, the Employer shall determine for each bid the evaluated Bid Price by adjusting any corrections for errors pursuant to Clause 23;
- 24.4 The Employer reserves the right to accept or reject any variation deviation or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for the Employer will not be taken into account in bid evaluation.
- 24.5 If the bid, which results in the lowest Evaluated Bid price, is unbalanced or frontloaded in relation to the Employer's estimate of the items of Work to be performed under the contract pursuant to Sub - Clause 24.2 ,the Employer shall ask the bidder to give clarification with detailed rate analysis for any or all items of the Bill of Quantities. If the clarification is found satisfactory then the Employer shall increase at the expense of the bidder the performance security set forth in clause 28 by additional 8% of the quoted amount to protect the Employer against financial loss in the event of default of the successful bidder under the contract and if the clarification is found unsatisfactory then the Employer may reject such bid.

F.

Award of Contract

25. Award of Contract

The Employer shall award the contract to the Bidder who has offered the lowest evaluated Bid Price, provided that such Bidder has been determined to be eligible in accordance with the provisions of Clause 2.

26. Employer's Right to Accept any Bid and to Reject any or all Bids

The Employer reserves the right to accept or reject any bid and to cancel the bidding process and reject all bids, at any time prior to the award of the contract, without assigning any reasons whatsoever and without thereby incurring any liability to the affected Bidder or Bidders.

27. Notification of Award and Signing of Agreement

27.1 The Employer shall notify its intention to award the Contract to the successful bidder in accordance with Clause 25 prior to the expiration of the bid validity period and within 7 days of acceptance of his bid. This notification (called the "Letter of Acceptance") shall state the sum that the Employer shall pay the Bidder in consideration of the execution, completion, and maintenance of the works as described by the contract. The employer shall also provide information regarding the name, address and the contract amount of the successful bidder to all bidders who participated in the bid.

27.2 Any Bidder who is not satisfied with the procurement process or Employer's decision as per Sub - Clause 27.1 and believes that the Employer has committed an error or breach of duty which has or will result in loss to the bidder then the bidder may give an application for review of the decision to the Employer with reference to the error or breach of duty committed by the Employer. The review application should be given within 7 days of receipt of information regarding issue of Letter of Acceptance by the Employer to the successful bidder.

27.3 If the review application is not received by the Employer as per clause 27.2 then the bid of the Bidder selected as per clause 25 shall be accepted by the Employer and the successful bidder shall be notified by the Employer to submit Performance security as per clause 28, within 15 days for signing of an Agreement.



27.4 If the successful bidder fails to deliver the Performance Security and sign the Agreement pursuant to Sub - Clause 27.3 then the Employer shall forfeit the Bid Security of the bidder and accept the bid of immediately next lowest evaluated substantially responsive bidder.

28. Performance Security

Within Fifteen (15) days of the receipt of Letter of Acceptance from the Employer, the successful Bidder shall furnish the performance security as under mentioned from A class Commercial Bank in accordance with the conditions of Contract using Sample Form for the Performance Security included in Section X (Contract Forms), or another form acceptable to the Employer. The performance security issued by any foreign Bank outside Nepal must be counter guaranteed by an "A" class commercial Bank in Nepal.

i) If bid price of the bidder selected for acceptance is up to 15 (fifteen) percent less than the approved cost estimate, the performance security amount shall be 5 (five) percent of the bid price.

ii) For the bid price less than 15 percent of the cost estimate, the performance security amount shall be determined as follows:

Performance Security Amount = $[(0.85 \times \text{Cost Estimate} - \text{Bid Price}) \times 0.5] + 5\%$ of Bid Price.

The Bid Price and Cost Estimate shall be inclusive of Value Added Tax.

If the bidder whose bid is accepted fails to sign the contract as stated ITB 39.1, the Public Procurement Monitoring Office shall blacklist the bidder on recommendation of the Public Entity.

29. Advance Payment

The Employer may provide an Advance Payment on the Initial Contract Price as stipulated in the Letter of Acceptance, subject to a maximum amount¹ as stated in the Bidding Data.

30. Additional Securities

The Contractor shall provide additional Performance Security pursuant to Sub - Cause 24.5

31. Adjudicator

The Employer proposes the person named in the Bidding Data to be appointed as Adjudicator under the Contract, at the hourly fee specified in the Bidding Data, 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 Contract Data at the request of either party.

32. Conduct of Bidders

32.1 The Bidder shall be responsible to fulfil his obligations as per the requirement of the Contract Agreement, Bidding documents, GoN's Procurement Act and Regulations.

32.2 The Bidder shall not carry out or cause to carry out the following acts with an intention to influence the implementation of the procurement process or the procurement agreement :

a) give or propose improper inducement directly or indirectly,

¹ This amount is normally 20 percent of the Contract Price. The amount should be adequate to minimize the needs of the Contractor to borrow for the Contract. This may be particularly important in terms of foreign currency.



- b) distortion or misrepresentation of facts
- c) engaging or being involved in corrupt or fraudulent practice
- d) interference in participation of other prospective bidders.
- e) coercion or threatening directly or indirectly to cause harm to the person or the property of any person to be involved in the procurement proceedings,
- f) collusive practice among bidders before or after submission of bids for distribution of works among bidders or fixing artificial/uncompetitive bid price with an intention to deprive the Employer the benefit of open competitive bid price..
- g) contacting the Employer with an intention to influence the Employer with regards to the bid or interference of any kind in examination and evaluation of the bids during the period after opening of bids up to the notification of award of contract

33. Blacklisting Bidder

33.1 Without prejudice to any other right of the Employer under this Contract, GoN, Public Procurement Monitoring Office may blacklist a bidder for his conduct up to three years on the following grounds and seriousness of the act committed by the bidder:

- a) if it is proved that the bidder committed acts pursuant to the Sub - Clause 32.2,
- b) if the bidder fails to sign an agreement pursuant to Sub - Clause 27.4,
- c) if it is proved later that the bidder/contractor had committed substantial defect in implementation of the contract or had not substantially fulfilled his obligations under the contract or the completed work is not of the specified quality as per the contract ,
- d) if convicted by a court of law in a criminal offence which disqualifies the bidder from participating in the contract.
- e) if it is proved that the contract agreement signed by the bidder was based on false or misrepresentation of bidder's qualification information,
- f) other acts mentioned in the Bidding Data

33.2 A firm declared blacklisted and ineligible by the GoN shall be ineligible to bid for a contract during the period of time determined by the PPMO.

G. Bidding Data

Instruction to Bidders Clause References

1. General

ITB 1	<p>The Employer is: Nepal Electricity Authority, Distribution and Consumer Service Directorate, Biratnagar Regional Office, Taplejung Distribution Center, Taplejung</p> <p>The Scope of Work: Office Building Construction Works at Taplejung Dcs, Taplejung.</p>
ITB 2	<p>Bidder's Eligibility Requirement:</p> <ol style="list-style-type: none"> Registration Certificate Business Registration Licence VAT and PAN Registration Certificates Tax Clearance Certificate or Submissions of Tax Returns up to Fiscal year 2073/074 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. Joint Venture Authorization/ Agreement (if any) Power of Attorney

2. Bidding Documents

ITB 7	<p>Employer's address for clarification purposes is: Nepal Electricity Authority, Distribution and Consumer Service Directorate, Biratnagar Regional Office ,Rani Biratnagar</p> <p>Requests for clarification should be received by the Employer no later than 7 days before bid submission date.</p>
-------	--

3. Preparation of Bids

ITB 8	The language of the bid is: English
ITB 11	The bid validity period shall be: 90 days from the last date of Bid Submission
ITB 12	<p>Amount of Bid Security is NRs. 2,40,000.00 (Two hundred Forty thousand Only)</p> <p>The bid security validity period shall be: 120 days from the last date of Bid Submission</p> <p>The Bank Account of the Employer: 0706017500016, Nabil Bank Biratnagar.</p>

4. Submission of Bids

<p>ITB 15</p>	<p>A Pre-Bid meeting <i>shall</i> take place. Date: 2074/09/01 Time: 2:00 PM Place: Nepal Electricity Authority, Distribution and Consumer Service Directorate, Biratnagar Regional Office ,Rani Biratnagar</p>
<p>ITB 16</p>	<p>The Employer’s address for bid submission purposes is: Nepal Electricity Authority, Distribution and Consumer Service Directorate, Biratnagar Regional Office ,Rani Biratnagar The deadline for bid submission is: Date: 2074/09/13 Time: 12:00 Noon</p>

5. Bid Opening and Evaluation

<p>ITB 19</p>	<p>The bid opening shall take place at: Address: Nepal Electricity Authority, Distribution and Consumer Service Directorate, Biratnagar Regional Office ,Rani Biratnagar Date: 2074/09/13 Time: 2:00 PM</p>
----------------------	---

6. Award of Contract

<p>ITB 29</p>	<p>The Advance Payment amount shall be: 20% and shall be paid to the Contractor no later than 15 days in two installment basis. 10% after the agreement and the remaining 10% after commencement of construction work.</p>
<p>ITB 31</p>	<p>The Adjudicator proposed by the Employer is The hourly fee for this proposed Adjudicator shall be Brief biographical data of the proposed Adjudicator is as follows :</p>

Section III. Special Instruction to Bidders for e-Bidding

A) Bid submission procedure through electronically (e-submission):

- i. Interested eligible bidders shall, either purchase the hard copy of the Bidding document directly from the Employer’s office as specified in the Invitation for Bid (IFB) or shall download the necessary parts of bidding documents from e-procurement section in NEA’s web Site <http://www.e-nea.org.np>. In case, the Bidder choose to download the bidding documents, prepare his/her bids on downloaded documents, and submit his/her bid electronically, the Bidder is required to deposit the non-refundable fee for the cost of bidding document (as specified in the bid notice) in the bank account specified in the IFB. In addition, electronic scanned copy (*.pdf format) of the Bank deposit voucher shall also be required to be submitted along with the electronic bid files.
- ii. The Bidder shall fill the following documents and forms (in hard copy of issued bid documents), signed by the authorised representative and with seal of the company.
 Bill of Quantity (BOQ) with rate, amount, b) Form of Bid, Qualification Information
 The Bidder shall then scan the completed original documents, forms in PDF formats with appropriate filename shown in the table below. PDF (Adobe acrobat) version must be 4.0 or above.

S.No.	Document	PDF File name	Requirement	Remarks
1	Form of Bid	Bid form -1	Mandatory	
2	Bid Security (Bank Guarantee)	Bid security-2	Mandatory	
3	Company registration,	Company reg-3	Mandatory	All firms in case of JV
4	VAT/PAN registration	VAT reg-4	Mandatory For National firms	All firms in case of JV
5	Tax clearances certificate for F/Y 2072/073	Tax-5	Mandatory For National firms	All firms in case of JV
6	Power of Attorney of Bid signatory	Power of att -6	Mandatory	
7	Joint venture agreement (if any)	JV doc-7	Mandatory	
8	Qualification Information	Qualifications-8	Mandatory	
9	BOQ with rate, amount and total amount	BOQ-9	Mandatory	
10	Manufactures Authorization	Authorization-10	Mandatory	NA
11	Technical Data Sheet	TDS-11	Mandatory	NA
12	Certification Documents	Certifications-12	Mandatory	NA
13	Declaration Form	Declaration-13	Mandatory	

Note: **Mandatory** means the mentioned files shall be included in e-submission and non-submission of such file shall be considered as non-responsive bid.

- iii. For e-submission purpose the Bidder shall, at first, register in the e-procurement section of NEA’s Web site <http://www.e-nea.org.np>
- iv. After preparing all the required bidding documents in PDF, scan files as specified as in (ii).



(Handwritten signature)

- v. The Bidder shall upload the PDF bid files and submit his/her complete bid online through e-procurement section of NEA's website <http://www.e-nea.org.np> within the specified date and time.
- vi. The e-procurement system will accept the e-submission of bid from the date after publishing of notice and will automatically not allow the e-submission of bid after the deadline for submission of bid, as specified above.
- vii. The standard time for e-submission is Nepalese Standard Time as set out in the server of MIS Department of NEA.
- viii. When a bidder submits his/her bid in hard copy the e-procurement section does not allow the bidder to submit his Substitution or Modification or Withdrawal through e-procurement section of NEA's web site.
- ix. Bidders may submit his Substitution or Modification or Withdrawal either in hard copy or through e-submission.
- x. For Substitution of Bid, the Bidder shall follow similar steps as specified in ITB Clause-22 with a Substitution letter in PDF file.
- xi. For Modification or Withdrawal of bid, the Bidder is required to submit PDF scan copy of their Modification or Withdrawal letter and a written Power of Attorney of the signatory for Modification/ Withdrawal, duly signed by Authorised Representative/s of the Firm / all authorised Joint Venture partners.
- xii. When a Bidder submits electronic bid by downloading the bidding documents from the NEA's webpage it is assumed that the Bidder prepares his bid by studying and examining all the Bidding documents including specifications and conditions of contract.
- xiii. In case, the Bidder choose to download the bidding documents and deposit the cost of bidding document (as specified in the bid notice), such deposited amount shall be verified by the office during bid evaluation process. The bid shall be non-responsive and shall not be evaluated if the specified cost for bidding document is not deposited in the specified Employer's (revenue) account for the said document.
- xiv. Proposed facility for submission of bid electronically through e-submission is to increase transparency, non-discrimination, equality of access, and open competition. The Bidders shall be fully responsible to use the e-submission facility in e-procurement section of NEA's website <http://www.e-nea.org.np> in specified procedures and in no case the Employer shall be held liable for Bidder's inability to use this facility.

B) Requirements and Conditions for e-submission of bid:

- i. The Bidder shall submit his bid electronically in PDF files in the manner specified above, and submission of hard copy of "original plus one copy of bid" is not mandatory.
- ii. In case, if both the electronic bid and original bid in hard copy are submitted to the Employer within the bid submission dead line, the Bidder's electronic bid and original bid in hard copy will be accepted for evaluation provided if the facts and figures in hard copy confirm to the PDF files in electronic bid. If there is any discrepancy in fact and figures in the electronic bid and original bid in hard copy, it will be treated as two separate bids from one Bidder and hence, both the electronic bid and original bid in hard copy shall be disqualified. However, for electronically submitted bid in PDF files, the Bidder shall be required to submit documents/ clarifications as specified in ITB clause within 3 days.
- iii. In case of e-submission of Bid, the Bidder shall be required to submit the original completed Bid consisting of Forms of Bid, Qualification Information, Special Conditions of Contract, Bill

of Quantities, Supplementary Information and other clarifications for verification purpose upon notification to do so from the Employer within 3 days.

- iv. In addition to electronically submitted PDF files, the Bidder shall be required to submit documents and clarifications as required by the Employer. Non-submission of such documents and/or clarifications by the Bidder within specified time may cause forfeiture of Bid Security.
- v. In case of major discrepancy found between electronically submitted PDF bid files and documents/ clarifications provided by the Bidder, the bid shall not be considered for further evaluation.
- vi. The Bidder shall attach the Bid Security Guarantee in the format attached in the Bid Document. The Bid Security may be forfeited
 - a. if the Bidder does not respond and/or submit the documents and or clarifications when requested by the Employer.
 - b. if major discrepancy is found between e-submitted bid information and documents/clarifications provided by the Bidder during verification process as requested by the Employer

C) Bid Opening for e-submitted Bid

- i. Electronically submitted bid shall be opened first at the Bid opening time.
- ii. The e-procurement system allows the Employer to download the e-submitted bid files from the Bidders only after the time for opening the bids.
- iii. The e-submitted bids must be readable through open standards interfaces. Unreadable and or partially submitted bid files (not complying with the ITB Clauses) shall be considered incomplete and rejected for further bid evaluation.
- iv. After opening of e-submitted bids files, all files shall be printed and recorded at the time of bid opening.
- v. In case of "WITDRAWAL" or "MODIFICATION" or "SUBSTITUTION" by the Bidder through e-submission, the e-submitted PDF files under "WITDRAWAL" or "MODIFICATION" or "SUBSTITUTION" shall be opened and read out first. Bids for which acceptable notice of "WITDRAWAL" or "SUBSTITUTION" has been submitted pursuant to ITB Clause shall not be opened.

D) Bid Evaluation and Comparison Process for e-submitted Bid

- i. In case of e-submitted Bids, the Employer evaluates the bid based on the information as per electronically bid files. For clarification/verification purpose, the Employer may request the Bidder to submit documents/clarifications.
- ii. In case, the Bidder could not substantiate or provide evidence to prove the information provided in e-submitted bid through documents/clarifications, the bid shall not be considered for further evaluation and respective ITB Clause or forfeiture of bid security shall be applicable.

D) Qualification Information

In case of e-Bidding, the Bidder is required to submit the documents to prove minimum qualification requirements only and not the detail documents.

E) Bid Security Format

Form of Bid security shall include the provision as "This Bank Guarantee shall not be withdrawn or released merely upon return of the original Guarantee by the Bidder unless notified by the Employer for the release of the Guarantee



Section IV. Sample Forms of Bid, Qualification Information, Letter of Acceptance and Agreement

Notes on Forms of Bid, Qualification Information, Letter of Acceptance and Agreement

The Agreement shall incorporate any corrections or modifications to the bid resulting from corrections of errors, price adjustment during the evaluation process, acceptable deviations or any other mutually-agreeable changes allowed for in the General Conditions.

The bid which the contractor has submitted to the Employer becomes part of the contract documents.

All the information with regard to the preparation of bid to meet the Employer's requirements shall be provided before issuing the bidding documents.

The contractor shall provide the remaining information by completing the form.

Bid

We have examined the documents and offer to execute the Works in conformity with the Contract for the sum of (in words)(in figures) or such other sum as may be ascertained under the contract.

This bid is submitted in one original and one duplicate copy.

We accept the appointment of [_____ ***name proposed in Bidding Data***] as the Adjudicator

[or]

We do not accept the appointment of [***name proposed in Bidding Data***] as the Adjudicator, and propose instead that [name] be appointed as Adjudicator, whose daily fees and biographical data are attached.

This bid shall remain binding until _____ [date]. This bid and your written acceptance of it shall constitute a binding contract between us.

We understand that the Employer is not bound to accept the lowest or any offer received for the Works.

Signature _____

Date: _____

Name: _____

Designation: _____

Authorised to sign on behalf of (organisation name): _____

Office Stamp of the Organisation: _____



Eligibility Information

Notes to Bidders

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

1. Eligibility Requirements:

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

- h) Registration Certificate [attach copy]**
- i) Place of Registration [insert]**
- j) Principal place of Business [insert address]**
- k) Business Registration Licence [attach copy]**
- l) VAT and PAN Registration Certificates [attach copy]**
- m) Tax Clearance Certificate or Submissions of Tax Returns as specified in Bidding Data [attach copies]**
- n) 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.**
- o) Joint Venture Authorization/ Agreement (if any)**
- p) Power of Attorney**

2. Joint Ventures Requirements (if any)

- 2.1 Attach the power of attorney of the signatory (ies) of the bid authorising signature of the bid on behalf of the joint venture.**
- 2.2 Attach the Agreement among all partners of the joint venture (and which is legally binding on all partners), which shows that**
 - (a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;**
 - (b) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture; and**
 - (c) execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.**
 - (d) each joint venture partners shall provide details as per information listed in 1 above.**

Letter of Intention to Award

[This letter should be in the letterhead paper of the Employer]

Notes on Letter of Intention to Award

The issue of Letter of Intention to Award will be the basis acceptance of bid by the Employer for issue of letter of Acceptance to the lowest evaluated Bidder 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 Intention to Award should be filled in and sent to the successful Bidder only after evaluation of Bids has been completed but before final acceptance of the Bid.

Date:

To: [name and address of the Contractor]

This is to notify you in accordance with the Instruction to Bidders that it is our intention to award the contract [name of the Contract and identification number, as given in the Contract Data and/or SCC] to you as your Bid price of the equivalent,² of [amount in numbers and words in Nepalese Rupees], as corrected and modified ³in accordance with the Instructions to Bidders, is determined to be substantially responsive and lowest evaluated Bid price.

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Agency: _____

² Delete "of the equivalent" if the Contract Price is expressed wholly in one currency.

³ Delete "corrected and" or "and modified" if not applicable. See Note on Agreement, next page.



Letter of Acceptance

[Letterhead of the Employer]

Date: _____

To: [name and address of the contractor]

This is to notify you that your bid dated [date] for execution of the [name of the Contract and identification number, as given in the Invitation to Bid] for the Contract Price of [insert the amount in Nepalese Rupees in numbers and words] as corrected and modified⁴ in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are hereby instructed to contact our office [Office address] to sign the formal agreement on [date] at [time]. As per the Instructions to Bidders you are also required to submit Performance Security, as specified in the SCC, consisting of a Bank Guarantee in an approved format or cash deposit voucher in favour of the Employer in the Employer's Bank account as specified in the SCC.

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

Please convey your unconditional acceptance by signing on the original of this letter and submit the required Performance Security, at the time of formal agreement.

Authorised Signature: _____

Name: _____

Designation: _____

⁴ Delete "corrected and" or "and modified" if not applicable. See Notes on Standard Form of Agreement, next page.



[Handwritten signature]

Agreement

This Agreement, made the [day] day of [month], [year] between [name and address of Employer] (hereinafter called "the Employer") and [name and address of contractor] (hereinafter called "the contractor") of the other part.

Whereas the Employer is desirous that the contractor execute [name and identification number of contract] (hereinafter called "the Works") and the Employer has accepted the bid for _____ [insert the amount in Nepalese Rupees in numbers and words] by the contractor for the execution and completion of such Works and the remedying of any defects therein.

Now this Agreement witnesseth as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the contractor as hereinafter mentioned, the contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
3. The Employer hereby covenants to pay the contractor in consideration of the execution and completion of the Works and the remedying of defects wherein, 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 thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of _____
was hereunto affixed in the presence of: _____

Signed, Sealed, and Delivered by the said _____
in the presence of: _____

Binding Signature of Employer _____

Binding Signature of Contractor _____

[Addendum showing the corrections if any made during the bid evaluation should be attached with this agreement]



Section V. General Conditions of Contract

A. General	
<p>1. Definitions</p>	<p>1.1 Boldface type is used to identify defined terms.</p> <p>(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.</p> <p>(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.</p> <p>(c) The Adjudicator is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in GCC 23.2 hereunder.</p> <p>(d) Bill of Quantities means the priced and completed Bill of Quantities forming part of the Bid.</p> <p>(e) Compensation Events are those defined in GCC 42 hereunder.</p> <p>(f) The Completion Date is the date of completion of the Works as certified by the Project Manager, in accordance with GCC 53.1.</p> <p>(g) The Contract is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works.</p> <p>It consists of the documents listed in GCC 2.3 below.</p> <p>(h) The Contractor is the party whose Bid to carry out the Works has been accepted by the Employer.</p> <p>(i) The Contractor's Bid is the completed bidding document submitted by the Contractor to the Employer.</p> <p>(j) The Contract Price is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract.</p> <p>(k) Days are calendar days; months are calendar-months.</p> <p>(l) Day works 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.</p> <p>(m) A Defect is any part of the Works not completed in accordance with the Contract.</p> <p>(n) The Defects Liability Certificate is the certificate issued by Project Manager upon correction of defects by the Contractor.</p> <p>(o) The Defects Liability Period is the period calculated from the Completion Date where the Contractor remains responsible for remedying defects.</p> <p>(p) Drawings include calculations and other information provided or approved by the Project Manager for the execution of the</p>

	<p>Contract.</p> <p>(q) The Employer is the party who employs the Contractor to carry out the Works, as specified in the SCC.</p> <p>(r) Equipment is the Contractor’s machinery and vehicles brought temporarily to the Site to construct the Works.</p> <p>(s) Force Majeure means an exceptional event or circumstance: which is beyond a Party's control; which such Party could not reasonably have provided against before entering into the Contract; which, having arisen, such Party could not reasonably have avoided or overcome; and, which is not substantially attributable to the other Party.</p> <p>(t) The Initial Contract Price is the Contract Price listed in the Employer’s Letter of Acceptance.</p> <p>(u) The Intended Completion Date is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the SCC. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.</p> <p>(v) Letter of Acceptance means the formal acceptance by the Employer of the Bid and denotes the formation of the contract at the date of acceptance.</p> <p>(w) Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works.</p> <p>(x) Party means the Employer or the Contractor, as the context requires.</p> <p>(y) SCC means Special Conditions of Contract</p> <p>(z) Plant is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.</p> <p>(aa) The Project Manager is the person named in the SCC (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.</p> <p>(bb) Retention Money means the aggregate of all monies retained by the Employer pursuant to GCC 46.1.</p> <p>(cc) The Site is the area defined as such in the SCC.</p> <p>(dd) 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.</p>
	<p>(ee) Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.</p> <p>(ff) The Start Date is given in the SCC. It is the latest date when the</p>



	<p>Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.</p> <p>(gg) 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.</p> <p>(hh) Temporary Works are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.</p> <p>(ii) A Variation is an instruction given by the Project Manager which varies the Works.</p> <p>(jj) The Works are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the SCC.</p>
<p>2. Interpretation</p>	<p>2.1 In interpreting these GCC, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Project Manager shall provide instructions clarifying queries about these GCC.</p> <p>2.2 If sectional completion is specified in the SCC, references in the GCC to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).</p> <p>2.3 The documents forming the Contract shall be interpreted in the following order of priority:</p> <ul style="list-style-type: none"> (a) Contract Agreement, (b) Letter of Acceptance, (c) Contractor’s Bid, (d) Special Conditions of Contract, (e) General Conditions of Contract, (f) Specifications, (g) Drawings, (h) Bill of Quantities (or Schedules of Prices for lump sum contracts), and (i) Any other document listed in the SCC as forming part of the Contract.
<p>3. Language and Law</p>	<p>3.1 The language of the Contract and the law governing the Contract are stated in the SCC.</p>
<p>4. Project Manager's Decisions</p>	<p>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.</p>



5. Delegation	5.1 The Project Manager may delegate any of his duties and responsibilities to other people, except to the Adjudicator, after notifying the Contractor, and may cancel 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 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 SCC. The Contractor shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification
9. Personnel and Equipment	<p>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.</p> <p>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.</p>
10. Employer's and Contractor's Risk	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	<p>11.1 From the Start Date until the Defects Liability Certificate has been issued, the following are Employer's risks:</p> <p>(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</p> <p>(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</p> <p>(ii) negligence, breach of statutory duty, or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor.</p> <p>(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</p>

	<p>radioactive contamination directly affecting the country where the Works are to be executed.</p> <p>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</p> <p>(a) a Defect which existed on the Completion Date,</p> <p>(b) an event occurring before the Completion Date, which was not itself an Employer's risk, or</p> <p>(c) the activities of the Contractor on the Site after the Completion Date.</p>
12. Contractor's Risks	<p>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.</p>
13. Insurance	<p>13.1 The Contractor shall provide insurance in the joint names of the Employer and the Contractor from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the SCC for the following events which are due to the Contractor's risks:</p> <p>(a) loss of or damage to the Works, Plant, and Materials;</p> <p>(b) loss of or damage to Equipment;</p> <p>(c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and</p> <p>(d) Personal injury or death.</p>
	<p>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 proportions of Nepalese Rupees required to rectify the loss or damage incurred.</p> <p>13.3 If the Contractor does not provide any of the policies and certificates required, the Employer may affect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.</p> <p>13.4 Alterations to the terms of insurance shall not be made without the approval of the Project Manager.</p> <p>13.5 Both parties shall comply with any conditions of the insurance policies.</p>
14. Site Investigation Reports	<p>14.1 The Contractor, in preparing the Bid, shall rely on any Site Investigation Reports referred to in the SCC, supplemented by any information available to the Bidder.</p>
15. Contractor to Construct the	<p>15.1 The Contractor shall construct and install the Works in accordance</p>

Works	with the Specifications and Drawings.
16. The Works to Be Completed within 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 within the intended Completion Date.
17. Design by contractor and Approval by the Project Manager	<p>17.1 The contractor shall be responsible for the design of permanent works as specified in SCC.</p> <p>17.2 Contractor shall be responsible for design of the Temporary Works. The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, for his approval.</p> <p>17.3 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, shall be subject to prior approval by the Project Manager before their use.</p> <p>17.4 The Project Manager's approval shall not alter the Contractor's responsibility for design of temporary works.</p>
18. Safety, Security and Protection of the Environment	<p>18.1 The Contractor shall, throughout the execution, and completion of the works and remedying of any defects therein:</p> <ol style="list-style-type: none"> a. Have full regard for the safety of all persons entitled to be upon the site and keep the site (so as the same is under his control) and the works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons. b. Provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when necessary or required by the Project Manager or by any duly constituted authority, for the protection of the Works of for the safety and convenience of the public or others. c. Take all reasonable steps to protect the environment on and off the site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation. d. Ensure that any cut or fill slopes are planted in grass or other plant cover as soon as possible to protect them from erosion. e. Any spoil or material removed from drains shall be disposed off to designated stable tipping areas as directed by the Project Manager. f. Shall not use fuel wood as a means of heating during the processing or preparation of any materials forming part of the works. g. The Project Manager shall have the power to disallow any working practice or activity of the Contractor or direct that such practices or activities be modified should the Project Manager consider, on the advice of the relevant Government



Handwritten signature in Nepali script.

	<p>Departments, that the practices or activities will be harmful to wildlife.</p> <p>h. Provide on the Site such life saving apparatus as may be appropriate and an adequate and easily accessible first aid outfit or such outfits as may be required by any government ordinance, factory act, etc., subsequently published and amended from time to time.</p>
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 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 SCC, 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	<p>22.1 The Contractor shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is located.</p> <p>22.2 The Contractor shall permit the GoN/DP and/or persons appointed by the GoN/DP to inspect the Site and/or the accounts and records of the Contractor and its sub-contractors relating to the performance of the Contract, and to have such accounts and records audited by auditors appointed by the GoN/DP if required by the GoN/DP. The Contractor's attention is drawn to Sub-Clause 58.2 which provides, inter alia, that acts intended to</p> <p>materially impede the exercise of the GoN's/DP's inspection and audit rights provided for under this Sub-Clause constitute a obstructive practice subject to contract termination.</p>
23. Dispute Settlement	<p>23.1 The Employer and the Contractor shall attempt to settle amicably by direct negotiation any disagreement or dispute arising between them under or in connection with the Contract.</p> <p>23.2 Any dispute between the Parties as to matters arising pursuant to this Contract which cannot be settled amicably within thirty (30) days after receipt by one Party of the other Party's request for such amicable settlement may be referred to Arbitration within 30 days after the expiration of amicable settlement period.</p>
25 Procedures for Disputes	25.4 In case of arbitration, the arbitration shall be conducted in accordance with the arbitration procedures published by the Nepal Council of Arbitration (NEPCA) at the place given in the SCC.

B. Time Control	
26. Program	<p>26.1 Within the time stated in the SCC, after the date of the Letter of Acceptance, the Contractor shall submit to the Project Manager for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works. In the case of a lump sum contract, the activities in the Program shall be consistent with those in the Activity Schedule.</p> <p>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.</p> <p>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 SCC. If the Contractor does not submit an updated Program within this period, the Project Manager may withhold the amount stated in the SCC from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted. In the case of a lump sum contract, the Contractor shall Provide an updated Activity Schedule within 15 days of being instructed to by the Project Manager.</p> <p>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.</p>
27. Extension of the Intended Completion Date	<p>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.</p> <p>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 at least 7 days prior to the intended completion date. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.</p>
28. Acceleration	<p>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.</p> <p>28.2 If the Contractor’s priced proposals for acceleration are accepted by the Employer, they are incorporated in the Contract Price and treated</p>



	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	<p>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.</p> <p>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.</p>
31. Early Warning	<p>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.</p> <p>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.</p>
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 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	<p>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 SCC. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.</p> <p>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.</p>



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	<p>36.1 In the case of a Unit Rate contract, the Bill of Quantities shall contain priced items for the Works to be performed by the Contractor. The Bill of Quantities is used to calculate the Contract Price. The Contractor will be paid for the quantity of the work accomplished at the rate in the Bill of Quantities for each item.</p> <p>36.2 In the case of a lump sum contract, the Activity Schedule shall contain the priced activities for the Works to be performed by the Contractor. The Activity Schedule is used to monitor and control the performance of activities on which basis the Contractor will be paid. If payment for Materials on Site shall be made separately, the Contractor shall show delivery of Materials to the Site separately on the Activity Schedule.</p>
37. Changes in the Contract Price	<p>37.1 In the case of an Unit Rate contract:</p> <p>(a) If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item</p> <p style="padding-left: 40px;">by more than 25 percent, provided the change exceeds 2 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change.</p> <p>(b) The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 10 percent, except with the prior approval of the Employer.</p> <p>(c) If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bill of Quantities.</p> <p>37.2 In the case of a lump sum contract, the Activity Schedule shall be amended by the Contractor to accommodate changes of Program or method of working made at the Contractor’s own discretion. Prices in the Activity Schedule shall not be altered when the Contractor makes such changes to the Activity Schedule.</p>
38. Variations	38.1 All Variations shall be included in updated Programs, and, in the case of a lump sum contract, also in the Activity Schedule, produced by the Contractor.
	<p>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 Manager and before the Variation is ordered.</p> <p>38.3 If the Contractor’s quotation is unreasonable, the Project</p>



	<p>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.</p> <p>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.</p> <p>38.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.</p> <p>38.6 In the case of an Unit Rate contract, if the work in the Variation corresponds to an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in GCC 37.1 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.</p>
<p>39. Cash Flow Forecasts</p>	<p>39.1 When the Program, or, in the case of a lump sum contract, the Activity Schedule, is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast.</p>



<p>40. Payment Certificates</p>	<p>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.</p> <p>40.2 The Project Manager shall check the Contractor’s monthly statement and certify the amount to be paid to the Contractor within 30 days of submission by contractor.</p> <p>40.3 The value of work executed shall be determined by the Project Manager.</p> <p>40.4 The value of work executed shall comprise:</p> <p>(a) In the case of an Unit Rate contract, the value of the quantities of work in the Bill of Quantities that have been completed; or</p> <p>(b) In the case of a lump sum contract, the value of work executed shall comprise the value of completed activities in the Activity Schedule.</p> <p>40.5 The value of work executed shall include the valuation of Variations and Compensation Events.</p> <p>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.</p>
<p>41. Payments</p>	<p>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 30 days of the date of each certificate. If the Employer makes a late payment, the Contractor shall be paid interest as indicated in the SCC on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made.</p> <p>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.</p> <p>41.3 Items of the Works for which no rate or price has been entered in BOQ shall not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.</p>
<p>42. Compensation Events</p>	<p>42.1 The following shall be Compensation Events:</p> <p>(a) The Employer does not give access to a part of the Site by the Site Possession Date pursuant to GCC 20.1.</p> <p>(b) The Employer modifies the Schedule of Other Contractors in a</p>



	<p>way that affects the work of the Contractor under the Contract.</p> <p>(c) The Project Manager orders a delay or does not issue Drawings, Specifications, or instructions required for execution of the Works on time.</p> <p>(d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects.</p> <p>(e) The Project Manager unreasonably does not approve a subcontract to be let.</p> <p>(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.</p> <p>(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.</p> <p>(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.</p> <p>(i) The advance payment is delayed.</p> <p>(j) The effects on the Contractor of any of the Employer's Risks.</p> <p>(k) The Project Manager unreasonably delays issuing a Certificate of Completion.</p> <p>(l) Force majeure events as determined by the Project Manager.</p> <p>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.</p> <p>42.3 As soon as information demonstrating effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager shall assume that the Contractor shall react competently and promptly to the event.</p> <p>42.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely</p>
--	---

	affected by the Contractor's not having given early warning or not having 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 30 days before the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected in the Contract Price or are a result of GCC 45.
44. Currency	44.1 The currency of Contracts shall be Nepalese Rupees.
45. Price Adjustment	<p>45.1 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the SCC. If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due.</p> <p>45.2 Adjustment Formulate⁵: "The adjustment to the Interim Payment Certificates in respect of changes in cost and legislation shall be determined from separate formulae for each of the types of construction work to be performed and Plant to be supplied. The formulae will be of the following general type:</p> $pn = A + b \frac{Ln}{Lo} + c \frac{Mn}{Mo} + d \frac{En}{Eo} + etc.$ <p>Where:</p> <p>pn is a price adjustment factor to be applied to the amount for the payment of the work carried out in the subject month, determined in accordance with Sub-Clause 41;</p> <p>A is a constant, specified in the Bidding Forms- Table of Price Adjustment data, representing the nonadjustable portion in contractual payments;⁶</p> <p>b, c, d, etc., coefficients representing the estimated proportion of each cost element (labor, materials, equipment usage, etc.) in the Works or sections thereof, net of Provisional Sums, as specified in the SCC;</p> <p>Ln, Mn, En, etc., are the current cost indices or reference prices of the cost elements for month "n," determined pursuant to Sub-Clause 45.4, applicable to each cost element; and</p> <p>Lo, Mo, Eo, etc., are the base cost indices or reference prices corresponding to the above cost elements at the date specified in Sub-Clause 45.4</p>
	45.3 Sources of Indices and Weightings: The sources of indices shall be those listed in the Bidding Forms- Table of Price Adjustment data, as approved by the Project Manager and stated in SCC. Indices shall be appropriate for their purpose and shall relate

⁵ For complex Works involving several types of construction work with different inputs, a family of Formulae will be necessary. The various items of Day work may also require different formulae, depending on the nature and source of the inputs

⁶ Insert a figure for factor A only where there is a part of the Contractors' expenditures which will not be subject to fluctuation in cost or to compensate for the unreliability of some indices. A should normally be 0.15. The sum of A, b, c, d, etc., should be one.



	<p>to the Contractor's proposed source of supply of inputs on the basis of which his Contract shall have been computed. As the proposed basis for price adjustment, the Contractor shall have submitted with his bid the tabulation of Weightings and Source of Indices in the Bidding Forms, which shall be subject to approval by the Project Manager.</p> <p>45.4 Base, Current and Provisional Indices: The base cost indices or prices shall be those prevailing on the day 30 days prior to the latest date for submission of bids. Current indices or prices shall be those prevailing on the day 30 days prior to the last day of the period to which a particular Interim Payment Certificate is related. If at any time the current indices are not available, provisional indices as determined by the Project Manager will be used, subject to subsequent correction of the amounts paid to the Contractor when the current indices become available.</p> <p>45.5 Weightings: The weightings for each of the factors of cost given in the Bidding Forms shall be adjusted if, in the opinion of the Project Manager, they have been rendered unreasonable, unbalanced or inapplicable as a result of varied or additional work already executed or instructed under Clause 38 or for any other reason.</p> <p>45.6 Subsequent Legislation: If, after the date 30 days prior to the latest date for submission of bids for the Contract, there occur changes to any National Statute, Ordinance, Decree, or other Law or any regulation or by-law of any local or other duly constituted authority, or the introduction of any such Statute, Ordinance, Decree, Law, regulation or by-law which causes additional or reduced cost to the Contractor, other than under the preceding sub-clauses of this clause, in the execution of the Contract, such additional or reduced cost shall, after due consultation with the Employer and the Contractor, be determined by the Project Manager and shall be added to or deducted from the Contract Price and the Project Manager shall notify the Contractor accordingly, with a copy to the Employer. Notwithstanding the foregoing, such additional or reduced cost shall not be separately paid or credited if the same shall already have taken into account in the indexing of any inputs to the Price Adjustment Formulae in accordance with the provisions of Sub-Clauses 45.2</p>
	<p>45.7 Where, price adjustment provision is not applicable pursuant to Sub-clause 45.1 then the Contract is subject to price adjustment only for construction material in accordance with this clause. If the prices of the construction materials stated in the contract is increased or decreased in an unexpected manner in excess of ten (10%) percent in comparison to the base price construction material stated in Section -IV, Bidding Forms-Table of Price Adjustment Data, then the price adjustment for the increase or decrease of price of the construction material beyond 10% shall be made by applying the following formulas:</p> <p>For unexpected increase in price</p> $P = [R_1 - (R_0 \times 1.10)] \times Q$ <p>For unexpected decrease in price P</p> $= [R_1 - (R_0 \times 0.90)] \times Q$



	<p>Where:</p> <p>“P” is price adjustment amount</p> <p>“R₁” is the present price of the construction material (Source of indices shall be those listed in the Bidding forms)</p> <p>“R₀” is the base price of the construction material</p> <p>“Q” is quantity of the construction material consumed in construction during the period of price adjustment consideration</p> <p>If the Base price and source is to be proposed by the Bidder as per the provision made in Section –IV, Bidding Forms-Table of Price Adjustment Data then the Base price and source filled by Bidder for the construction material stated in the Bidding Form shall be subject to the approval of the Project manager and shall be as stated in SCC..</p> <p>45.8 The Price Adjustment amount shall be limited to a maximum of the initial Contract Amount as specified in the SCC.</p> <p>45.10 The Price Adjustment provision shall not be applicable for delayed period if the contract is not completed in time due to the delay caused by the contractor or the contract is a Lump sum Contract or a Fixed Budget Contract.</p>
<p>46. Retention</p>	<p>46.1 The Employer shall retain from each payment due to the Contractor the proportion stated in the SCC until Completion of the whole of the Works.</p> <p>46.2 Upon the issue of a Defects Liability Certificate by the Project Manager, in accordance with GCC 55.1, half the total amount retained shall be repaid to the Contractor and half when the Contractor has submitted the Tax evidence document issued by the concerned Internal Revenue Office that the contractor has submitted his Income Returns . On completion of the whole works, the Contractor may substitute retention money with an “on demand” bank guarantee.</p>
<p>47. Liquidated Damages</p>	<p>47.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the SCC for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the SCC. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor’s liabilities.</p> <p>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.41</p>
<p>48. Bonus</p>	<p>48.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day stated in the SCC for each day (less any days for which the Contractor is paid for acceleration) that the Completion is earlier than the Intended Completion Date. The Project Manager shall certify that the Works are complete, although</p>



	they may not be due to be complete.
49. Advance Payment	<p>49.1 The Employer shall make advance payment to the Contractor of the amounts stated in the SCC by the date stated in the SCC, against provision by the Contractor of an unconditional bank guarantee from 'A' class commercial Bank in a form and by a bank acceptable to the Employer in amounts equal to the advance payment. The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest shall not be charged on the advance payment.</p>
	<p>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.</p> <p>49.3 The advance payment shall be repaid by deducting proportionate amounts, as stated in SCC, from payments otherwise due Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation Events, Bonuses, or Liquidated Damages.</p>
50. Securities	<p>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 SCC, by a 'A' class commercial bank acceptable to the Employer, and denominated in Nepalese Rupees. The Performance Security shall be valid until a date 30 days from the date of issue of the Defect Liability Certificate in the case of a bank guarantee.</p> <p>50.2 The performance security issued by any foreign Bank outside Nepal must be counter guaranteed by an "A" class commercial Bank in Nepal.</p>
51. Day works	<p>51.1 If applicable, the Day works rates in the Contractor's Bid shall be used for small additional amounts of work only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.</p> <p>51.2 All work to be paid for as Day works shall be recorded by the Contractor on forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the work being done.</p> <p>51.3 The Contractor shall be paid for Day works subject to obtaining signed Day works forms.</p>
52. Cost of Repairs	<p>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</p>

	Contractor's acts or omissions.
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 work 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 60 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 60 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a payment certificate.
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 SCC. 56.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the SCC pursuant to GCC 56.1, or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount stated in the SCC from payments due to the Contractor.
57. Termination	57.1 In no case, the Contractor shall terminate the Contract unilaterally without duly notifying the Employer. 57.2 The Employer may terminate the Contract at any time if the contractor; a. does not commence the work as per the Contract, b. abandons the work without completing, c. fails to achieve progress as per the Contract. 57.3 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract. 57.4 Fundamental breaches of Contract shall include, but shall not be limited to the following: (a) The Contractor uses the advance payment for matters other than the contractual obligations, (b) the Contractor stops work for 30 days when no stoppage of work is shown on the current Program and the stoppage has not been

	<p>authorized by the Project Manager;</p> <p>(c) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 30 days;</p> <p>(d) the Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation.</p> <p>(e) a payment certified by the Project Manager is not paid by the Employer to the Contractor within 90 days of the date of the Project Manager's certificate;</p> <p>(f) the Project Manager gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;</p> <p>(g) the Contractor does not maintain a Security, which is required; and</p> <p>(h) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the SCC.</p> <p>(i) If the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract, pursuant to GCC 58.1.</p> <p>57.5 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 57.2 above, the Project Manager shall decide whether the breach is fundamental or not.</p> <p>57.6 Notwithstanding the above, the Employer may terminate the Contract for convenience.</p> <p>57.7 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.</p>
<p>58. Fraud and Corruption</p>	<p>58.1 If the Employer determines that the Contractor has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices, in competing for or in executing the Contract, then the Employer may, after giving 15 days notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site.</p> <p>58.2 Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with Clause 9.</p> <p>For the purposes of this Sub-Clause;</p> <p>(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.</p> <p>(ii) "fraudulent practice"⁵ is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;</p>



	<p>(iii) “collusive practice”⁶ is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;</p> <p>(iv) “coercive practice”⁷ is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;</p> <p>(v) “obstructive practice” is</p> <p>(aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or</p> <p>(bb) acts intended to materially impede the exercise of the GON’s/DP’s inspection and audit rights provided for under Sub-Clause 22.2.</p>
<p>59. Black Listing</p>	<p>59.1 Without prejudice to any other rights of the Employer under this Contract, GoN, Public Procurement Monitoring Office (PPMO), on the recommendation of procuring entity, may blacklist a Bidder for its conduct for a period of one (1) to three (3) years on the following grounds and seriousness of the act committed by the bidder.</p> <p>(a) if it is established that the Contractor has committed substantial defect in implementation of the contract or has not substantially fulfilled its obligations under the contract or the completed work is not of the specified quality as per the contract.</p>
<p>60. Payment upon Termination</p>	<p>60.1 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 indicated in the SCC. 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.</p> <p>60.2 If the Contract is terminated because of fundamental breach of Contract or for any other fault by the Contractor, the performance security shall be forfeited by the Employer. In such case, amount to complete the remaining works as per the Contract shall be recovered from the Contractor as Government dues</p>

5 a “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 “parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

7 a “party” refers to a participant in the procurement process or contract execution.

	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.
61. Property	61.1 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.
62. Release from Performance	62.1 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.
63. Suspension of DP Loan/Credit/Grant	63.1 In the event that the Donor Agency suspends the loan/ credit/grant to the Employer from which part of the payments to the Contractor are being made: <ul style="list-style-type: none"> a. the Employer is obligated to notify the Contractor of such suspension within 7 days of having received the Donor Agency's suspension notice; and b. if the Contractor has not received sums due him within the 30 days for payment provided for in Sub-Clause 41.1, the Contractor may immediately issue a 15-day termination notice.
64. Project Manager’s Duties and Authorities	64.1 The Project Manager’s duties and authorities are restricted to the extent as stated in the SCC.
65. Quarries and Spoil Dumps	65.1 Any quarry operated as part of this Contract shall be maintained and left in a stable condition without steep slopes and be either refilled or drained and be landscaped by appropriate planting. Rock or gravel taken from a river shall be removed over some distance so as to limit the depth of material removed at any one location, not disrupt the river flow or damage or undermine the river banks. The Contractor shall not deposit excavated material on land in Government or private ownership except as directed by the Project Manager in writing or by permission in writing of the authority responsible for such land in Government ownership, or of the owner or responsible representative of the owner of such land in private ownership, and only then in those places and under such conditions as the authority, owner or responsible representative may prescribe.



<p>66. Local Taxation</p>	<p>66.1 The prices tendered by the Contractor shall include all taxes that may be levied in accordance to the laws and regulations in being in Nepal on the date 30 days prior to the closing date for submissions of Bids on the Contractor's equipment, plant and materials acquired for the purpose of the Contract and on the services performed under the Contract. Nothing in the Contract shall relieve the Contractor from his responsibility to pay any tax that may be levied in Nepal on profits made by him in respect of the Contract.</p>
<p>67. Value Added Tax</p>	<p>67.1 The Contract is not exempted from value added tax. An amount specified in the schedule of taxes shall be paid by the Contractor in the concerned VAT office within time frame specified in VAT regulation.</p>
<p>68. Income Taxes on Staff</p>	<p>68.1 The Contractor's staff, personnel and labor will be liable to pay personal income taxes in Nepal in respect of their salaries and wages, as are chargeable under the laws and regulations for the time being in force, and the Contractor shall perform such duties in regard to such deductions as may be imposed on him by such laws and regulations.</p> <p>68.2 The issue of the Final Account Certificate pursuant to clause 55 shall be made only upon submittal by the Contractor of a certificate of income tax clearance from the Government of Nepal.</p>
<p>69. Duties, Taxes and Royalties</p>	<p>69.1 Any element of royalty, duty or tax in the price of any goods including fuel oil, and lubricating oil, cement, timber, iron and iron goods locally procured by the Contractor for the works shall be included in the Contract rates and prices and no reimbursement or payment in that respect shall be made to the Contractor.</p> <p>69.2 The Contractor shall familiarize himself with GON the rules and regulations with regard to customs, duties, taxes, clearing of goods and equipment, immigration and the like, and it will be necessary for him to follow the required procedures regardless of the assistance as may be provided by the Employer wherever possible.</p> <p>69.3 The Contractor shall pay and shall not be entitled to the reimbursement of cost of extracting construction materials such as sand, stone/boulder, gravel, etc. from the river beds or quarries. Such prices will be levied by the local District Development Committee (DDC) as may be in force at the time. The Contractor, sub-contractor(s) employed directly by him and for whom he is responsible, will not be exempted from payment of royalties, taxes or other kinds of surcharges on these construction materials so extracted and paid for to the DDC.</p>
<p>70. Member of Government, etc, not Personally Liable</p>	<p>70.1 No member or officer of GoN or the Employer or the Project Manager or any of their respective employees shall be in any way personally bound or liable for the act or obligations of the Employer under the Contract or answerable for any default or omission in the observance or performance of any of act, matter or thing which are herein contained.</p>



<p>71. Approval of Use of Explosives</p>	<p>71.1 No explosives of any kind shall be used by the Contractor without the prior consent of the Employer in writing and the Contractor shall provide, store and handle these and all other items of every kind whatsoever required for blasting operations, all at his own expense in a manner approved in writing by the Employer.</p>
<p>72. Compliance with Regulations for Explosives</p>	<p>72.1 The Contractor shall comply with all relevant ordinances, instructions and regulations which the Government, or other person or persons having due authority, may issue from time to time regarding the handling, transportation, storage and use of explosives.</p>
<p>73. Permission for Blasting</p>	<p>73.1 The Contractor shall at all times maintain full liaison with and inform well in advance, and obtain such permission as is required from all Government authorities, public bodies and private parties whatsoever concerned or affected, or likely to be concerned or affected by blasting operation.</p>
<p>74. Records of Explosives</p>	<p>74.1 Before the beginning of the Defects Liability Period, the Contractor shall account to the satisfaction of the Project Manager for all explosives brought on to the Site during the execution of the Contract and the Contractor shall remove all unused explosives from the Site on completion of works when ordered by the Project Manager.</p>
<p>75. Traffic Diversion</p>	<p>75.1 The Contractor shall include the necessary safety procedures regarding and pedestrian traffic diversion that is needed in execution of the works. The Contractor shall include in his costing of works, any temporary works or diversion that are needed during the construction period. All traffic diversion should be designed for the safety of both the motoring public and the men at work. It shall ensure the uninterrupted flow of traffic and minimum inconvenience to the public during the period concerned. As such, adequate warning signs, flagmen and other relevant safety precautionary measures shall be provided to warn motorists and pedestrians well ahead of the intended diversion as directed by the Project Manager. All traffic devices used shall be designed in accordance with the instruction of Project Manager.</p>

Section VI. Special Conditions of Contract

A. General	
GCC 1.1 (q)	The Employer is Nepal Electricity Authority, Distribution and Consumer Service Directorate, Biratnagar Regional Office, Taplejung Distribution Center, Taplejung
GCC 1.1 (u)	The Intended Completion Date for the whole of the Works shall be 12 months from the date of agreement.
GCCs 1.1 (aa) & 4.1	The Project Manager will be notified during Contract Agreement .
GCC 1.1 (cc)	The Site is located at Taplejung Distribution Center, Taplejung
GCC 1.1 (ff)	The Start Date shall be Agreement Date.
GCC 1.1 (jj)	The Works consist of Office Building Construction Work at Taplejung Distribution Center.
GCC 3.1	The language of the contract is ENGLISH/NEPALI The law that applies to the Contract is the law of NEPAL
GCC 13.1	The minimum insurance amounts and deductibles shall be: <ol style="list-style-type: none"> 1. The minimum cover for loss of or damage to the Works, Plant and Materials is: 115 %of the Contract Amount. 2. The maximum deductible for insurance of the Works and of Plant and Materials is: NRS. 50,000 (Fifty Thousand) 3. The minimum cover for loss or damage to Equipment is : Replacement Cost 4. The maximum deductible for insurance of Equipment is: NRS. 25,000 (Twenty Five Thousand) 5. The minimum for insurance of other property is 1,000,000 (One Million)with unlimited number of occurrences 6. The maximum deductible for insurance of other property is: NRs.50,000 (Fifty Thousand) 7. The minimum cover for personal injury or death insurance <ol style="list-style-type: none"> i. for the Contractor's employees is that specified in the Labor act of Nepal and ii. for other people is :NRS. 500,000 (Five Hundred Thousand) per person with an unlimited number of occurrences ii. For Employer's/Engineer's staff: NRS. 1,000,000 (One Million) per person(Maximum 10 persons)with an unlimited number of occurrences
B. Time Control	
GCC 26.1	The Contractor shall submit for approval a Program for the Works within 7 days from the date of the Letter of Acceptance.
GCC 26.3	The period between Program updates is 30 days. The amount to be withheld for late submission of an updated Program is Ten thousand only.

C. Quality Control	
GCC 34.1	The Defects Liability Period is: 12months.
D. Cost Control	
GCC 41.1	N/A
GCC 45.1	The Contract is not subject to price adjustment.
GCC 45.7	N/A
GCC 45.8	N/A
GCC 46.1	The proportion of payments retained is: 5 (FIVE) PERCENT
GCC 47.1	The liquidated damages for the whole of the Works are 0.05 PERCENT of the final Contract Price per day. The maximum amount of liquidated damages for the whole of the Works is 10 PERCENT of the final Contract Price.
GCC 48.1	N/A
GCC 49.1	The Advance Payments shall be: 20% and shall be paid to the Contractor no later than 15 days in two installment basis. 10% after the agreement and the remaining 10% after commencement of construction work.
GCC 49.3	Deductions from Payment Certificates will commence in the first certificate in which the value of works executed exceeds 30% of the Contract Price. Deduction will be at the rate of [Insert percentage] ¹ of the respective Monthly Interim Payment Certificate until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the end of 80 % of the approved contract period.
E. Finishing the Contract	
GCC 56.1	The date by which operating and maintenance manuals are required is <i>N/A</i>
	The date by which “as built” drawings are required is <i>within 30 days after completion of Work.</i>
GCC 56.2	The amount to be withheld for failing to produce “as built” drawings and/or Operating and maintenance manuals is <i>One hundred thousand only.</i>
GCC 57.2 (g)	The maximum number of days is: 60

GCC 64	<p>The Project Manager has to obtain the specific approval of the Employer for taking any of the following actions :</p> <ul style="list-style-type: none">a. Approving subcontracting of any part of the works under General Conditions of Contract Clause 7;b. Certifying additional costs determined under General Conditions of Contract Clause 42;c. Determining start date under General Conditions of Contract Clause 1;d. Determining the extension of the intended Completion Date under General Conditions of Contract Clause 27;e. Issuing a Variation under General Conditions of Contract Clause 1 and 38, except in an emergency situation, as reasonably determined by the Project Manager; emergency situation may be defined as the situation when protective measures must be taken for the safety of life or of the works or of adjoining property.f. Adjustment of rates under General Conditions of Contract Clause 37;
--------	---

Section VII. Technical Specification

Notes on the Specification

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

Samples of specifications from previous similar projects in the same country are useful in this respect. Most specifications are normally written specially by the Employer or Project Manager to suit the Contract Works in hand. There is no standard set of specifications for universal application in all sectors in all countries, but there are established principles and practices, which are reflected in these documents.

There are considerable advantages in standardising General Specifications for repetitive Works in recognized public sectors, such as highways, ports, railways, urban housing, irrigation, and water supply, in the same country or region where similar conditions prevail. The General Specifications should cover all classes of workmanship, materials, and equipment commonly involved in construction, although not necessarily to be used in a particular Works Contract. Deletions or addenda should then adapt the General Specifications to the particular Works.

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

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national, or relate to a particular country or region, other authoritative standards that ensure a substantially equal or higher quality than the standards and codes specified will be accepted subject to the Project Manager's prior review and written consent. Differences between the standards specified and the proposed alternative standards shall be fully described in writing by the contractor and submitted to the Project Manager at least 28 days prior to the date when the contractor desires the Project Manager's consent. In the event the Project Manager determines that such proposed deviations do not ensure substantially equal or higher quality, the contractor shall comply with the standards specified in the documents.

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

Specifications

GENERAL SPECIFICATION

1. GENERAL

1.1. Scope

These General Technical Specifications cover principles, responsibilities and requirements for items which are of general nature and which will be applicable to all civil engineering and building work pertinent to works. They shall be read in conjunction with the Technical Specification, the Conditions of Contract, the Bills of Quantities (BOQ) and the Drawings. The scope of works under this Contract chiefly includes Office Building Construction works at Taplejung Dcs. The bidders are requested to visit the site before bidding.

1.1.1. General Note

- The work has to be performed under the supervision of the Consultant employed by NEA.
- The work shall be carried out simultaneously with the electrical, plumbing, sanitary and other trades in cooperation with the trade contractors. The building Contractor shall keep the other trade contractors informed well in advance of the proposed program of the work so that good coordination is effected. The Contractor shall further cooperate with other trade contractors in respect of any facilities required by them e.g. making holes in shuttering for pipes, electric conduits, fan hooks etc. Nothing extra shall be admissible to him for such reasonable assistance and facilities afforded to other contractors and the building contractor shall be deemed to have taken these factors into consideration while quoting his tender rates.
- The work shall be related to the drawings, which the contractor is presumed to have studied. Nothing extra will be paid for any item by reason of its shape, location or other difficult circumstances, even if the schedule makes no such distinction so long as the item is shown in the drawings.
- The materials stated in the specifications are those which are generally available. The materials not conforming to specifications shall be rejected even if they come from stated sources. The Contractor shall satisfy himself that sufficient quantities of material of acceptable specification are available from the stated or other sources.
- All Provisional items in the schedule shall be carried out at the discretion of the Employer at the contractor quoted rate and may or may not form part of the contract. In case new items are to be carried out by the contractor, the rates for which shall be settled as for extra item as stated in the conditions of contract.
- The requirement under **1: General** and **2: Material** shall be fulfilled by the contractor without any extra charge including transportation or any other taxes involved i.e. the item rates quoted shall be deemed to have taken those into account.
- "Employer" shall mean "NEA / Electricity distribution Center, Taplejung."
- "Engineer" shall denote the "Engineer" as defined in the Clause 1.1 of the Condition of Contract.

1.2. Access to and Possession of Site

1.2.1. The Site

The Site includes any designated areas and any temporary working areas described herein.

Final Possession of the Site or Parts thereof, for the purpose of carrying out the execution of the Works to be given by the Employer pursuant to Clause 21.1 of the Conditions of Contract, shall be subject to any restrictions mentioned in the Contract

1.2.2. Temporary Way-leaves, Access Costs

The Contractor shall be responsible for obtaining temporary way-leaves. The cost of obtaining way-leaves for temporary working areas and for any additional areas outside the Site required by the Contractor in connection with the Works as well as for the access to all of these shall be borne by the

Contractor himself. The Contractor shall arrange for the serving of any Statutory Notices as per Clause 1.5 of this

specification in connection with any temporary working area and shall give to the occupier of each such area seven days notice of his intention to enter and shall ensure that his methods of working cause the minimum of disturbance to the land and to its owners and occupiers.

The Contractor shall at all times provide proper facilities for access and inspection of the Works by the Engineer, his assistants, inspectors, agents and representatives of public agencies having jurisdiction. The extent of each temporary working area and the period of time for its occupation shall be such as the Engineer considers necessary having regard to the Contractor's reasonable requirements which shall be submitted together with the Work Program to the Engineer within 7 days after the Letter of Acceptance.

The Contractor shall reinstate any temporary working areas to the condition prevailing prior to his initial entry as soon as possible after the work in those areas has been completed so as to keep the period of occupation to a minimum. The Contractor shall in any event restore the areas to a tidy and workmanlike condition. Boundary walls, fences and other structures that have been damaged, removed or otherwise interfered with by the Contractor shall be restored to a condition at least equivalent to their original condition.

Prior to commencing work in the vicinity of overhead power lines the Contractor shall acquaint himself with all the regulations of the Nepal Electricity Authority governing such work. The Contractor shall be responsible for ensuring that all persons working in such areas are aware of the relatively large distance that high voltage electricity can "short" to earth when cranes or other large masses of steel are in the vicinity of power lines.

1.3. Site Installations

1.3.1. Camp for Contractor's Staff

The Contractor shall provide adequate housing with all necessary amenities and facilities for his staff and labor. The type of housing, such as accommodation containers, pre-fabricated or in-situ buildings or even rental is entirely up to him. Also the choice of one central camp or of various sub-camps is up to him as this depends greatly on the approved work program. During the whole period of existence, from setting up through operation to final removal upon completion of the Works, the Contractor shall be fully responsible for constantly carrying out all measures necessary for safeguarding the natural environment affected by his camp or camps.

He shall cause the least possible interference with existing amenities, whether man-made or natural. No trees shall be felled except as authorized by the Engineer (ref. Clause 1.3.20 of this specification). Latrine and ablution facilities and first-aid services shall be provided in sufficient type and numbers to the satisfaction of the Engineer and shall be maintained in a clean and sanitary condition at all times. On completion of the Works or as soon as the facilities provided by the Contractor are no longer required, the Contractor shall remove such facilities and clear away all surface indications of their presence.

1.3.2. Contractor's Offices, Stores and Services

The Contractor shall provide, erect, construct, maintain and subsequently remove proper offices, stores, workshops, laboratories, storage and parking areas for his own use. Such facilities shall be sufficiently sized and equipped to enable him to manage his operations and those of his Subcontractors in a professional manner and to enable him to carry out all his obligations under the Contract.

Sheds for storage of materials that may deteriorate or corrode if exposed to the weather shall be weatherproof, adequately ventilated and provided with raised floors. Safe, dry and proper storage shall be provided for all materials, particularly for cement. The Capacity of the cement storage go-down shall at least 1000 bags installed at the site of work.

Within his offices a meeting room shall be available for site meetings with the Engineer and the Employer. These facilities of the contractor shall be subject to the same stipulations regarding sitting, interference with amenities and environmental protection as the Contractor's camp.

1.3.3. Contractor's Plant

When working in built-up areas, the Contractor shall provide and use suitable and effective silencing devices for pneumatic tools and other plant that would otherwise cause a noise level exceeding 85 dB (A) during excavation and other work. Alternatively, he shall, by means of barriers, effectively isolate the source of any such noise in order to comply with above requirement.

1.3.4. Water Supply

The Contractor shall make his own arrangements for the supply of all water for his camp, office and other temporary buildings as well as for the execution of the Works. Temporary water connection may be arranged with NWSC at established rates. Water for testing of pipe sections, however, shall not be taken from the mains as stipulated in the relevant Section of the Technical Specifications. When using other sources of water such as stone spouts, etc. the Contractor shall have due regard to and coordinate with other users. Water for drinking purposes shall be of drinking water quality.

1.3.5. Sanitation

The Contractor shall maintain the Site and all working areas in hygienic conditions. In all matters of health and sanitation he shall comply with the requirements of the local Medical Officer of Health or other competent authority.

1.3.6. Sewage and Waste Disposal

The Contractor shall make provision for the discharge or disposal from his camp, offices and the Works of all water as well as of all liquid and solid waste products however arising. The methods of disposal shall be to the satisfaction of the Engineer and of any authority or person having an interest in any land or watercourse over or in which water and waste products may be so discharged.

1.3.7. Pollution

The Contractor shall take all reasonable measures to minimize any dust nuisance, pollution of streams and inconvenience to or interference with the public (or others) as a result of the execution of the Works.

1.3.8. Energy Supply

The Contractor shall install, operate, maintain and subsequently remove temporary supplies of electricity for power, heating, cooling, lighting and ventilation of all camps, offices, stores, laboratories and other temporary buildings used by the Contractor in addition to all electricity requirements in connection with the construction, testing and maintenance of the Works.

The Contractor shall ensure that all proposed electrical installations comply with the requirements of the Nepal Electricity Authority and shall be responsible for and shall bear all costs associated with obtaining the written approval of that authority for such installations and their operations. Prior to placing orders for transformers, conductors, cables and associated equipment, the Contractor shall ensure by inquiry with the Nepal Electricity Authority that his proposed equipment is suitable for use with the existing or proposed medium/high tension electricity supply lines.

1.3.9. Supply of Fuel, Lubricants etc

The Contractor shall be responsible for arranging and ensuring that adequate supplies of petrol, diesel oil, motor oil, kerosene, lubricants and other petroleum products are available at all times to meet his requirements for the purpose of or in connection with the Contract; the Contractor's particular attention is drawn to this requirements as from time to time shortages and interruptions in the supply of fuel oils, etc., may occur. He shall make his own arrangements for the supply of all other types of fuel required for the purposes of the Contract.

Firewood may be obtained on the open market. Under no circumstances shall the Contractor cut down trees for firewood. With regard to the transportation, storage and handling of all his fuel requirements, including all electrical connections, he must strictly comply with all relevant safety codes and regulations.

1.3.10. Temporary Telephone Connections

The Contractor shall arrange at his own cost for temporary telephone connections to his offices and other installations. He shall be responsible for all installations, connection/disconnection charges for his and his Representative's offices.



(Handwritten signature)

1.3.11. First Aid

The Contractor shall make his own arrangements for treatment of casualties on the Site in such first-aid units as may be thought necessary. The Contractor shall be responsible for the construction of such first-aid units and their management and operation and the removal by ambulance of injured or sick employees to nearby hospitals. The first-aid service shall cover the Contractor's own personnel as well as that of the Employer, the Engineer and all Subcontractors.

1.3.12. Fire Protection

No naked fire shall be used by the Contractor on or about the Site otherwise than in the open air without the permission in writing of the Engineer. If in the Engineer's opinion the use of naked fire may cause a fire hazard, the Contractor shall at no extra cost to the Employer take such additional precautions and provide such additional fire fighting equipment as the Engineer considers necessary. The term "naked fire" shall be deemed to include electric arcs and oxyacetylene or other flames used in welding or cutting metals. Compliance with the requirements of the Engineer shall not relieve the Contractor of any of his obligations under the Contract.

1.3.13. Contractor's Canteen

The Contractor shall provide adequate eating facilities for his employees and workmen.

1.3.14. Site Safety

The Contractor shall at all time in the conduct of his work and that of his Subcontractors adhere to the established rules and regulations concerning all safety matters at Site. The construction safety shall comply with the **NBC 114:1994**.

The Contractor's Safety Officer shall have the qualification and the authority to issue instructions to the Contractor's personnel regarding protection measures to prevent accidents. During construction the Contractor shall erect, maintain and subsequently remove sufficient barricades, guards, lighting, sheeting, shoring, temporary sidewalks and bridges, danger signals as well as temporary covering of potential accident areas.

If and where required the Contractor shall erect and maintain suitable and approved temporary fencing to enclose such areas of the works and areas of land occupied by the Contractor within the Site as may be necessary to implement his obligations under the Contract. All open excavations along pipelines shall be protected sufficiently to keep out livestock, and ensure the safety of workmen and members of the public and be in accordance with the directives of the police and the other local regulations.

Where work is to be carried out in the proximity of buildings, tanks or other structures, the Contractor shall take all necessary precautions, including shoring and strutting, where necessary, to ensure the safety of the structures that are at risk.

The Contractor shall be responsible for all damages or injury which may be caused on any property by trespass by the Contractor's or his Subcontractor's employees in the course of their employment, whether the said trespass was committed with or without the consent or knowledge of the Contractor.

1.3.15. Protection of Overhead and Underground Services

The Contractor will be held responsible for any damage to known services (i.e. services that are within the Site and are shown on the drawings) and he shall take all necessary measures to protect them. All work or protective measures shall be subject to approval of the Engineer. In the event of a service being damaged, the Contractor shall not repair any such service unless instructed to do so.

Where no underground services are shown on the drawings or scheduled but the possibility of their presence can reasonably be inferred, the Contractor shall, in collaboration with the Engineer, ascertain whether any such services exist within the relevant section of the Site. The Contractor shall complete such an investigation well in advance of the start of construction work in the said section and he shall submit a report in good time to enable the Engineer to make whatever arrangements are necessary for the protection, removal or diversion of the services before any construction works commences.

As soon as any underground service not shown on the drawings is discovered, it shall be deemed to be a known service and the Contractor will be held responsible for any subsequent damage to it. If such service is damaged during the course of its discovery, the cost of making good such damage will be met by the Employer unless he establishes that the Contractor did not exercise reasonable diligence and that the damage was avoidable. Where the authority concerned elects to carry out on its own account



any alterations or protective measures, the Contractor shall co-operate with and allow such authority reasonable access and sufficient space and time to carry out the required work.

Permanent alterations to or permanent diversion of services necessitated by the execution of the Works and authorized will be paid for in terms of the conditions of contract, but no such work will be paid for if it has not been previously inspected and if proper written instructions have not been given.

1.3.16. Signboards

Signboards of size approximately 2.15m X 2.0m shall be placed at specified approved locations. This board shall be painted in approved color with names of (1) the Project and Employer, (2) the Engineer (3) Contractor and (4) any other specialist Consultant if any. They shall be of durable construction capable of withstanding the effects of the climate until the end of the Defects Liability Period. The Contractor shall keep the name boards in good repair for the duration of the contract and shall remove them on completion of the contract. Besides these signboards the Contractor shall not, except with the written authority of the Engineer, exhibit or permit to be exhibited on the site any other form of advertisement. This board shall be provided by the contractor at his own expense.

1.3.17. Site Roads

The Contractor shall provide and maintain such access to the various sections of the Works as he requires for the proper execution of the work. Access roads shall be so arranged as to minimize inconvenience to adjoining landowners or occupants and to the general public. The site roads shall be of gravel or equivalent material providing a hard surface for vehicles. Temporary roads shall be removed when they are no longer required.

1.3.18. Testing Facilities, Contractor's Laboratory

The Contractor shall provide a site laboratory equipped and furnished with all testing facilities required to perform all mandatory tests stipulated in the various specific clauses of the Technical Specifications. Other tests which may be required upon instruction of the Engineer and which cannot be performed in the site laboratory shall be carried out on behalf of the Contractor at other laboratories acceptable to the Engineer.

The Contractor shall provide a laboratory in the site and appoint a testing lab acceptable to the engineer with equipment at his own cost within 15 days after signing the "Form of Agreement", then maintain till the entire Contract period for carrying out the tests therein under the supervision of a qualified engineer, to be removed on completion of the work. The laboratory shall be 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 Engineer. The Contractor's laboratory shall have the following equipment in working condition, labor and materials required for tests.

Compression testing machine	1 set
Standard I.S. sieves for testing sand and aggregates up to 38mm	2 sets
Hydrometer (NA)	1 set
Penetrometer (NA)	1 set
Weighing balance up to 10 kg (NA)	1 set
Field balances minimum 1 gm (NA)	1 set
Weighing scale minimum 1 gm (NA)	1 set
Glass measuring flask ½ liter and 1 liter (NA)	4 sets
Stove and pans for sand drying (NA)	1 set
Slump cone	2 sets
Metal Cube moulds	36 sets

Water tank for curing of concrete cubes, workbenches, tables, etc. to the satisfaction of the Engineer

The Contractor shall maintain the equipment in good serviceable condition and any breakdown or discrepancies shall be immediately corrected or equipment replaced if it is found to be inaccurate.

The Contractor shall perform tests on materials on the site, cast concrete cubes as specified and shall submit to the Engineer two copies of the results of each test, such results being entered on forms as approved by the Engineer. The third copy of the result of each test shall be retained in the Contractor's Laboratory. Without relieving the Contractor of any of his responsibilities for the testing of materials the Engineer may, as and when desired, carry out any of the tests, using the facilities provided by the Contractor, for this Work.



1.3.19. Clearing the Site

The Site described and shown on the plans plus 6m all round the built-up area 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 leveled off as directed. Also the Contractor shall dress the site 6m all round the built-up area after completion, maximum cutting or filling under this item being 300mm. No extra shall be paid for this unless specified otherwise.

1.3.20. Tree

For the purpose of the Specification a tree shall be defined as a growth whose circumference of the trunk at 300mm from the base is not less than 900mm. Where necessary, trees shall be cut in sections from the top downwards. No tree shall be cut down until the Engineer has given written authorization for such work to commence. If possible, trees shall be felled in such a manner as to allow removal of the root together with the trunk. Individual trees indicated and marked by the Engineer as trees to be preserved shall be left standing and uninjured. An amount of NRs 100,000/- shall be deducted from amount due to the Contractor as a penalty in respect of every such tree that is damaged or removed unnecessarily or without the authorization of the Engineer.

1.3.21. Cleaning-up of Site

Before application is made for the Employer to accept any substantially completed Section of the Works, all items shall be complete, ready to operate and in a clean condition. All trash, debris, unused building materials and temporary facilities shall have been removed from the Site. Tools, equipment and construction machinery not needed during the subsequent Defects Liability Period for repair and adjustment shall not remain on the Site. The temporary walkways, parking areas and roadways shall be completely swept and broomed.

1.3.22. Site Drainage

The Contractor shall keep each section of the works well drained until the Engineer certifies that it is substantially complete and shall ensure that, so far as is practicable, all work is carried out in the dry. Excavated areas shall be kept well drained and free from standing water except where this is impracticable having regard to methods of Temporary Works properly adopted by the Contractor. The Contractor shall provide, operate and maintain in sufficient quantity such pumping equipment, well points, pipes and other equipment as may be necessary to minimize damage, inconvenience and interference and shall construct, operate and maintain all temporary coffer-dams, sumps, ditches, drains and other temporary works as may be necessary to remove water from the Works while construction is in progress. Such Temporary Works and plant shall not be removed without the approval of the Engineer.

Notwithstanding any approval by the Engineer of the Contractor's arrangements for the removal of water, the Contractor shall be responsible for the sufficiency thereof and for keeping the Works safe at all times and for making good at his own expense any damage to the Works. The Contractor shall be responsible to keep the Works clear of water at whatever pump rate found necessary.

1.3.23. Measurement and Payment

No separate measurement and payment will be made for works under Clause 1.3, the cost of which shall be deemed to be included in unit rates of the BOQ.

1.4. Coordination with other Authorities

1.4.1. Statutory Services

As far as possible the Contractor shall acquaint himself with the actual location of all existing public utilities such as sewers, water mains, drains, cables for electricity, telephone lines, lighting poles, masts, etc., before commencing any works likely to affect the existing utilities. The Contractor shall with the assistance of the Employer obtain such information directly from the responsible authorities as early as possible.

1.4.2. Notices, Permits

Well in advance of the programmed start of any work which may affect traffic or any existing utilities the Contractor shall give advance notice to the respective authority indicating the type, the exact location, the programmed starting time and the expected duration of the works and shall provide



whatever particulars may be required by the authorities to issue any required permits and make all necessary arrangements. The Employer will provide whatever assistance possible to the Contractor to facilitate the permit procedure which, however, will remain the sole responsibility of the Contractor.

1.4.3. Witnessing and Post-Construction Clearances

It is expected that the issue of these permits will be tied to the requirement that the work may only be carried out in the presence of authorized inspectors from the authorities concerned. Their job will be to witness and assess any damage or interference with their respective utility. Should such disturbances occur it would be at their discretion to authorize either the Contractor to correct them or to arrange for specialized repairs through their own personnel.

The Contractor shall be fully responsible for all costs whatever resulting from avoidable damages of or interference with other utilities. As proof that the works in question have been completed to the satisfaction of the authorities concerned the Contractor shall submit to the Engineer upon request official post-construction clearances issued by the respective authorities.

1.5. Submissions by the Contractor

1.5.1. Pre-Construction Surveys and Setting Out

Upon commencement of the Works he shall carry out all additional survey work necessary for setting out the Works in accordance with the condition of contract. He shall establish all setting out necessary for the performance of the Work to the approval of the Engineer including levels of the original ground surface at the Site and final surveys of the completed Works for the final measurement. Levels shall close within 25-mm times the square root of the length of the circuit in km. Ground levels shall be taken jointly by the Contractor and the Engineer both prior to commencing and after completion of earthworks. The result of the survey shall be recorded in the manner agreed between the Engineer and the Contractor and be signed by both.

The Contractor's methods of recording survey data shall be subject to approval and field books and tabulated data shall be well maintained and made available for inspection and checking by the Engineer when ordered.

Instruments and equipment for surveys shall be subject to rigorous inspection by both the Contractor and Engineer and any item found to be defective, in the opinion of Engineer, shall be promptly replaced, repaired or adjusted as directed. All surveying shall be done under the direct supervision of a qualified surveyor or engineer who, as an employee of the Contractor, he shall be subject to the approval of the Engineer at all times during the progress of the work.

1.5.2. Drawings, Instruction and Measurements

All work shall be done according to the drawings and instructions of the Engineer, and the Contractor shall arrange to test materials and/or portions of the work at his own cost in order to prove their soundness and sufficiency. If after any such test and in the opinion of the Engineer any work or position 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.

In addition to above,

- Contractor shall record drawings of the ground level survey prior to start of any earthwork.
- Contractor shall record drawing of any other level surveys taken for the purpose of measurement of quantities for excavation or filling.
- Survey records drawing as specified above shall be submitted within 7(seven) days after the completion of the survey works recorded on them.
- Survey notes on the depth and width of trench excavation.

1.5.3. As-Built Drawings

During the course of the Works, the Contractor shall maintain a fully detailed record of all changes from the approval to facilitate easy and accurate preparation of the As-Built Drawing.

The Contractor shall submit 1 (one) set original copy and 3 (three) set of As-Built Drawings clearly named as such to the Engineer after Two weeks from date of completion.

Irrespective of the other contractual prerequisites, if the contractor does not supply the drawing with in the above stated date the sub clause 58.0 of the condition of Contract shall be applied.



1.5.4. **Progress Reports**

The Contractor shall furnish the Engineer, at no extra cost to the Employer, at regular monthly intervals 3 copies in a form determined by the Engineer, with Progress Reports containing the following information:

- a) Physical progress for the report month and estimated progress for the next month;
- b) Completion schedules (target and actual) based on the approved construction programme as provided in Clause 27 of the Conditions of Contract;
- c) Updated S-curves for physical progress at different sections of the Works
- d) Any report which the Employer and/or the Engineer may specifically request.
- e) These monthly reports shall be submitted not later than 7 days after the end of the report month.

1.5.5. **Record/Progress Photographs**

The Contractor shall arrange for at least 24 Nos. of photographs to be taken by a professional photographer monthly, or as ordered by Engineer as Record Photographs and shall provide the 2 color prints each on paper of a size not less than 210 mm x 297 mm (A4). Each print shall contain upon its back the date and description of the view taken. The Contractor shall ensure that no use is made of any photograph or print without permission from Employer. Out of these Record Photographs the Contractor shall select 10 characteristic ones as Progress Photographs to be attached to Progress Reports.

1.5.6. **Test Certificate**

Contractor shall submit all the certificates of laboratory test and field test.

1.5.7. **Details of proposed methods**

Contractor shall submit details of proposed methods as stated below

- Proposed methods of excavation transport of materials, filling and compaction.
- Proposed source of free-draining fill and methods of selective excavation or processing.
- Program for quality control of earthworks and proposals for the use of laboratories.

1.5.8. **Samples**

Samples of each class of materials required shall be submitted by the Contractor for the approval of the Engineer and after such approval these samples shall be deposited at a safe place chosen by the Engineer. The Contractor will be required to perform all the works under the contract in accordance with these approved samples. This also includes the sample of material proposed for filling where specified or where specifically required by the Engineer.

1.5.9. **Levels to be recorded**

Before the surface of any part of the site is disturbed or the works thereon are begun the Contractor shall take and record levels and dimensions of any such part. The Contractor shall also take and record such other levels and dimensions as are necessary during the progress of excavation to allow accurate measurement of the different categories of excavation.

All levels and dimensions shall be taken in the presence of the Engineer and recorded in the manner specified or as agreed with the Engineer, and such levels when agreed with the Engineer shall form the basis for measurement

1.5.10. **Measurement and Payment**

No separate measurement and payment will be made for works under Clause 1.5, the cost of which shall be deemed to be included in unit rates of the BOQ.

1.6. Quality Control

1.6.1. Quality Control Plan and Procedures

The Contractor shall be responsible for establishing and maintaining procedures for quality control, which will ensure that all aspects of the Works comply with the requirements of the Contract. As soon as reasonably practicable prior to the commencement of Works the Contractor shall submit for approval a Quality Control Plan giving detailed proposals for control of quality of all aspects of work on the Site and at suppliers' workshops.

The Quality Control Plan shall include the following:

- (a) A list of the Contractor's staff engaged in quality control
- (b) A list of any outside testing agencies employed by the Contractor for work in connection with quality control
- (c) Where a testing laboratory is to be established on Site under the Contract, a list of major items of equipment and a layout of the laboratory, together details of the tests which will be carried out there
- (d) A list of manufactured items and materials, obtained by the Contractor for the Works, which require inspection at the suppliers' premises, and the proposed procedures for ensuring quality control
- (e) A list of materials and operations to be inspected by the Contractor at the various stages of construction work on Site, together with inspection procedures, test types and frequencies
- (f) Sample of proposed quality control records, testing and reporting forms.

Unless the Engineer permits otherwise, the approved Quality Control Plan shall be followed throughout the construction of the Works. Any approval by the Engineer of the Contractor's plan and procedures shall not relieve the Contractor of his obligation to ensure that the Works comply with the requirements of the Contract. The Contractor shall appoint a suitably qualified member of his staff to be responsible for all aspects of quality control and to maintain effective liaison with the Engineer.

1.6.2. Sampling and Testing

The Contractor shall provide for the approval of the Engineer, samples of all construction materials and manufactured items required for the Permanent Works. All samples rejected by the Engineer shall be removed from Site. All approved samples shall be stored on Site by the Contractor for the duration of the Contract, and any materials or manufactured items subsequently delivered to Site for incorporation in the Permanent Works shall be of a quality at least equal to the approved sample.

Samples shall be submitted and tests carried out sufficiently early to enable further samples to be submitted and tested if required by the Engineer. Samples for testing will generally be selected by the Engineer from materials to be utilized in the project and all tests will be under the supervision of, and as directed by, and at such points as may be convenient to the Engineer. Material requiring testing shall be furnished in sufficient time before intended use so as to allow for testing. No materials represented by tests may be used prior to receipt of written approval of said materials.

The Contractor shall give the Engineer at least 14 days notice in writing of the date on which any of the materials will be ready for testing or inspection at the suppliers' premises or at a laboratory approved by the Engineer and unless the Engineer shall attend at the appointed place and time the test may proceed in his absence. The Contractor shall in any case submit to the Engineer within 7 (seven) days after every test such number of certified copies of the test readings as the Engineer may require. Approval by the Engineer as to the placing of orders for materials or as to samples or tests shall not prejudice any of the Engineer's powers under the Contract. The provisions of this Clause shall also apply to materials supplied under any nominated subcontract.

After all construction at each Section is completed and before applying for taking-over, the Contractor shall perform field tests as called for in the Specifications. The Contractor shall demonstrate to the Engineer the proper operation of the facilities and the satisfactory performance of the individual components. Any improper operation of the system or any improper or faulty construction shall be repaired or corrected to the satisfaction of the Engineer. The Contractor shall make such changes, adjustments or replacement of equipment as may be required to make the same comply with the Specifications, or replace any defective parts or materials.

In addition to any special provision made herein as to sampling and testing materials by particular methods, samples of materials and workmanship proposed to be employed in the execution of the Works may be called for at any time by the Engineer and these shall be furnished without delay by the Contractor at his own cost. Approved samples will be retained by the Engineer who will be at liberty to reject all materials and workmanship that are not equal or better in quality and character than such approved samples. All costs incurred by the Contractor, in connection with sampling and testing of all materials and items required for the Works shall be deemed to be included and covered by the tendered Contract Rates.

Notwithstanding the provisions for payment in respect of testing all costs in connection with conducting tests and delivery of samples to an approved laboratory shall be deemed to be included by the Contractor in Unit Rate of the BOQ for the following categories of tests also:

- (a) Tests conducted at the premises of the Contractor, Subcontractor, manufacturer or supplier that are normally or customarily carried out at such premises for the items or materials being supplied for the Works
- (b) Tests which are normally or customarily conducted on the items or materials being supplied for the Works by the Contractor, Subcontractor, supplier or manufacturer but which have to be conducted at an approved laboratory because the necessary testing facilities are not available on the premises of the Contractor, Sub-Contractor, supplier and manufacturer
- (c) Tests on locally obtained materials or items either on the Site or at an approved laboratory for the purpose of obtaining the approval of the Engineer to the classification, use and compliance with the Specifications of such items or materials
- (d) Routine quality control tests conducted by the Contractor to ensure compliance with the Specifications
- (e) Regular testing of concrete and other materials as specified in the relevant Chapters of the Technical Specifications
- (f) Standard shop and Site acceptance tests, including trial assemblies, of mechanical equipment.

1.6.3. **Preservation of Approved Samples**

Where samples, including samples of materials and workmanship constructed on the Site, are submitted as a reference for materials and workmanship to be provided as part of the Permanent Works, they shall, after approval by the Engineer, be carefully preserved for this purpose on site by the Contractor to the satisfaction of the Engineer until permission is given by the Engineer for their disposal.

1.6.4. **Inspection and Acceptance**

The Engineer may appoint Inspecting Engineers to inspect and test materials and articles on his behalf prior to their dispatch to the Site. The Inspecting Engineer will examine, test and if necessary analyze all materials and articles to be used in the Works including all items of fabricated or finished work unless the Engineer shall direct otherwise. The Inspecting Engineer shall be granted free access at all reasonable times to the premises of Contractor and/or any Subcontractor and shall be afforded every facility for making inspections, making tests, which it is normal or customary to undertake at premises of the Contractor or Sub-Contractor and for taking samples for testing and analysis.

The Contractor and/or Subcontractor shall give adequate notice to the Engineer or the Inspecting Engineer as to when any materials, articles or fabricated work will be ready for inspection and shall take into account the possibility of delays in postal communication when giving such notice. Belated requests by telephone or telex for an immediate inspection of particular items scheduled for shipment which cannot be met will not be sufficient reason for waiving inspection thereof and the Contractor shall be held solely responsible for all consequences arising out of any delay resulting from his failure to give adequate notice. The Engineer and the Inspecting Engineer shall be kept properly informed of the progress of any work being carried out on materials and articles being prepared or supplied by the Contractor or any Subcontractor for use in the Works to enable them to make such arrangements for inspection, testing and analysis as they may consider appropriate.

The Engineer may require to inspect work being prepared and to witness tests at supplier's premises. The Contractor shall give the Engineer adequate notice of the program of work and testing at suppliers' premises to enable the Engineer to arrange such inspections. Manufactured items and materials delivered to the Site shall be inspected by the Contractor on arrival. Any defects shall be

notified to the Engineer. Minor defects to surface finishes and the like in manufactured items shall be made good in an approved manner to the satisfaction of the Engineer. Items with more serious defects shall be returned to the suppliers for correction or replacement as appropriate. Inspections or tests carried out by or on behalf of the Engineer shall not relieve the Contractor of his responsibilities in connection with quality control.

1.6.5. **Materials/Equipment Certificates**

Where certificates are required by the Specifications or relevant Reference Standard, the original and one copy of each such certificate shall be provided by the Contractor. Certificates shall be clearly identified by serial or reference number and shall include information required by the relevant Reference Standard or Specification clause.

The timing for submittal of certificates shall be as follows:

- (a) Manufacturer's and supplier's test certificates shall be submitted as soon as the tests have been completed and in any case not less than 7 calendar days prior to the time that the materials represented by such certificates are needed for incorporation into the Permanent Works
- (b) Certificates of tests carried out during the construction or on completion of parts of the Permanent Works shall be submitted within 7 days of the completion of the test.

No materials, articles or items of fabricated or finished work to be supplied by the Contractor or Subcontractors which have been inspected and tested by the Engineer or the inspecting Engineer shall be dispatched unless a Passing Certificate has been requested by the Contractor from the Engineer and subsequently been issued by the Engineer to the effect that the same are approved. Neither the Contractor nor Sub-Contractors shall make use of any materials or articles ordered by them for the purpose of fabrication until a Passing Certificate covering the said materials and articles shall have been issued by the Engineer or inspecting Engineer.

1.6.6. **Site Records**

Daily records of on-site testing and inspection shall be kept on forms of approved format. The responsible member of the Contractor's staff shall certify test results. All test certificates and inspection records (including any from suppliers or other outside testing agencies) shall be clearly identified with the appropriate part of the Works to which they refer, and they shall be submitted to the Engineer together with the respective Passing Certificate. Once each month, or at such longer intervals as the Engineer may allow, the Contractor shall submit in an approved form a summary of all quality control inspections and tests performed at Site and elsewhere in the intervening period.

Test results shall be summarized in tabular form or graphically or both in a way, which best illustrates the trends, specific results and specification requirements. Where the tests show that the specified requirements were not achieved, the report shall describe the action, which was taken. Each report shall also contain a forecast of quality control work likely to be carried out during the period to be covered by the succeeding report. The Contractor shall keep detailed and up-to-date inventories in an approved form of goods and materials already approved by the Engineer for which Passing Certificates have been issued as well as of all other goods and materials subject to quality control which are on order, delivered, found faulty, lost during the work or to be surplus to requirements. The Engineer shall have access to these records at all times.

1.6.7. **Daily Log Book/ Request for examination**

The Contractor shall keep a Daily Log Book at each site. This Daily Log Book shall be in a form approved by the Engineer and shall contain, but not be limited to, the following major items of information:

- (a) Name of Contractor and Package No.
- (b) Date
- (c) Weather conditions (max./min., temperature, hours and intensity of rainfall)
- (d) Work carried out during the day per Section (description, quantities)
- (e) Major equipment used per section (on contractual work, on extra work, approximate operating time on either)
- (f) Strength of labour force per Section (on contractual work, on extra work ordered, hours worked on either)
- (g) Delays (cause, effects such as idle time etc.)

- (h) Unusual events (earthquakes, floods, fires, storms, accidents, etc.)
- (i) Visitors at Site.

Each daily log shall be signed by the responsible Site Manager of the Contractor and "noted" by the Engineer.

1.6.8. Measurement and Payment

No separate measurement and payment will be made for works under Clause 1.6, the cost of which shall be deemed to be included in Unit Rates of the BOQ.

2. MATERIALS

2.1. 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 Engineer in writing. The materials shall be from approved manufacturer, freshly procured, handled /stored properly in a approved manner and used in a professional manner to ensure completed work in accordance with the Contract. Whenever an NS, IS etc are specified, the latest version of the standard quoted shall be considered to apply.

2.2. Sources

The material should be from the approved source in order to maintain quality, consistency and quality required for this project. The use of any one kind or class of material from more than one source is prohibited, except by written permission of the Engineer. Such permission if granted will set forth the conditions under which the change may be made. The sources or kinds of material shall not be changed at any time without written permission of the 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 alternations in plant operations or by a change of source. Claims for increased costs, which may be occasioned by such alternations, 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 proprietary or manufactured product, either new or used, is furnished by the Employer, the location at which such material will be delivered to the Contractor will be designated. In such cases, the Contractor shall haul the materials from the designated delivery point to the point of use, and compensation for such hauling shall be negotiated prior to compliance, and shall include the price for placing the materials in the finished work.

2.3. Inspection and Acceptance of Materials

Final inspection and acceptance of materials will be made only at the site of work. The Engineer reserves the right to sample, inspect and test materials throughout the duration of the project; and to reject, order removal any or all the material not confirming to the specification (i.e. unsatisfactory quality, improper or unapproved make) from the site at any time. A preliminary inspection of materials may be made at the source for the convenience of the Contractor, but the presence of Engineer at the source shall not relieve the Contractor of the responsibility of furnishing materials, which comply with these Specifications in the project. The Engineer shall have free entry at all times to those parts of any plant, which concern the manufacture, or production of the materials ordered.

2.4. Procurement Program, Samples and Tests

The Contractor shall submit sample of all materials for the approval of the Engineer prior to commencement of work. The Contractor shall give immediate notification of the placing of orders for shipment of materials for testing. He shall furnish without charge all samples required and he shall afford such facilities, as the 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 Engineer be used until the tests are completed. If the



Handwritten signature in Nepali script.

material fails to pass the tests, the Contractor shall take the necessary steps to satisfactorily correct the deficiencies subject to the approval of the Engineer.

When required by the Engineer, preliminary samples of the character and quantity prescribed shall be submitted by the Contractor for examination and shall be tested. Samples approved shall not be constructed as acceptance of materials. Acceptance or rejection shall be based on the results of the tests and inspections prescribed in these Specifications of the batches received at the site. Within two weeks from the date of signing this Contract the Contractor shall also furnish a detailed "Procurement of Materials Program" for the approval of the Engineer. This Procurement Program shall cover the programming of all sample collection, time for approvals by the Engineer, time for procurement, order, transport and arrivals at the Project Site to be completed within the first six months of the Project as assessed from the date of signing this Contract for all building and finishing materials. Failure on the part of the Contractor to comply with this clause shall be treated as a breach of contract. Assessment of the Program of work at the end of the said Project shall be evaluated by the Engineer, and should the Project not be completed in the specified time, in the light of the above, the Engineer's decision shall be final and binding on the Contractor. All samples shall arrive in sufficient time for testing and approvals keeping in mind the time required for the final procurement and arrival of the approved materials at the Project Site and this time factor shall conform to the Program of Works and Procurement.

2.5. Defective Materials

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 from the site unless otherwise permitted by the Engineer. 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 Engineer. Failure of the Contractor to comply promptly with any order of the Engineer given under this Clause, he shall request the Employer to remove and replace the rejected materials and the cost thereof shall be deducted from any amount due to the contractor.

2.6. 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 necessary as required by the Engineer. He shall be the sole judge as to the quality and suitability of alternative articles or materials and his decision shall be final.
- b) Whenever the specifications permits 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 (i.e. catalogue or specification describing the dimension and quality of the product) as to the equality of the material or article proposed. Such request shall be made in ample time to permit approval to avoid delaying the work.

2.7. Imported Materials

Materials, which are manufactured, produced or fabricated outside Nepal, shall be delivered in time. 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 to the point of entry into Nepal to permit timely delivery to the job site. The Contractor shall supply the facilities and arrange for any testing required at his own cost. All testing by the Contractor shall be subject to witnessing by the Engineer.

The manufacturer, producer or fabricator of imported material shall furnish to the Engineer a "Certificate of Compliance" with the specifications where required. In addition certified mill test reports clearly identifiable to the lot of material delivered shall be furnished where required by him. 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 Engineer, the sufficiency of their in-plant quality control, as deemed necessary by him or his representative, to give satisfactory assurance of their ability to furnish material uniformly and consistently in conformance with these specifications. At the option of the Engineer, such sufficiency shall be established whether by submission of detailed written proof thereof or through in-plant inspection by him or his representative.

3. STANDARDS, CODES AND ABBREVIATIONS

3.1. Reference Standards and Codes

The Works shall be carried out in accordance with the relevant quality standards, test procedures or codes of practice, collectively referred to as Reference Standards, listed in the relevant parts of the Specifications. The Contractor shall familiarize himself fully with the requirements of such standards. If no standard is indicated then the relevant ISO Standard or, in the absence of such standard, the relevant German, British, American or Indian Standards shall apply, or others, if so approved.

The Contractor may propose, at no extra cost to the Employer, the use of any alternative relevant authoritative internationally recognized Reference Standard, which shall be no less exacting, in the opinion of the Engineer, than the corresponding standard quoted in the Specification. The Contractor shall demonstrate to the Engineer that the alternative standard is suitable and equivalent to the specified standard, as well as provide proof of previous successful use. The Engineer shall decide whether or not the use of such alternative will be allowed as a Reference Standard. The Contractor shall obtain and keep on Site at least one copy of each approved Reference Standard and each Reference Standard referred to in the Specifications, and will make these accessible to the Engineer at any time upon request.

The Contractor shall obtain the Reference Standards from the addresses given below :

- ISO International Organisation for STANDARDIZATION, Rue de Varembe, Geneva, Switzerland
- DIN Deutsche Industrie Norm (German Industry Standard) from Deutsche Normenausschuss, Beuth-Vertrieb, P.O. Box 1045, W-1000, Berlin 30, Federal Republic of Germany
- BSI British Standards Institution, 101 Pantonville Road, London N1 9ND, England
- AASHTO American Association of State Highway and Transportation Officials, Suite 341 National Press Building, Washington, D.C. 2004, U.S.A.
- ACI American Concrete Institute, P.O. Box 4754, Redford Station, Detroit, MI 48219, U.S.A.
- AISC American Institute of Steel Construction, 101 Park Avenue, New York, NY 10017, U.S.A.
- ASTM American Society for Testing and Materials, 2501 Race St., Philadelphia, PA 19103, U.S.A.
- AWS American Welding Society, Inc., 2501 NW 7th St., Miami, FL 33125, U.S.A.
- AWWA American Water Works Association, 6666 West Quincy Ave. Denver, Colorado 80235, U.S.A.
- IS Indian Standards, Manak Bhawan - 9, Bahadur Shah Jafar Marg, New Delhi, 11002
- SIS Swedish Standards

3.2. Equivalency of Standards and Codes

Wherever reference is made in the Contract to specific standards and codes to be met by the goods and materials to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national, or relate to a particular country or region, other authoritative standards which ensure an equal or higher quality than the standards and codes specified will be accepted subject to the Engineer's prior review and written approval. Differences between the standards specified and the proposed alternative standards must be fully described in writing by the Contractor and submitted to the Engineer at least 28 days prior to the date when the Contractor desires the Engineer's approval. In the event the Engineer determines that such proposed deviations do not ensure equal or higher quality, the Contractor shall comply with the standards specified in the documents.



(Handwritten signature)

3.3. Metric Units

S.I. units of measurement shall be used throughout the Contract. The Contractor shall transfer all information and data originating in another system into the S.I. system.

3.4. Abbreviations

ACI	=	American Concrete Institute
AC	=	asbestos cement, alternating current
AASHTO	=	American Association of State Highway and Transportation Officials
ASTM	=	American Society for Testing and Materials
BOQ	=	Bill of Quantities, Schedule of Quantities
BS	=	British Standard
CBR	=	California Bearing Ratio
cm	=	centimetre
cm ² /g	=	square centimetre per gram
d	=	day(s)
dia	=	diameter
DIN	=	Deutsche Industries Norm (German Standard)
DN	=	diameter nominal (=ND)
g/cm ³	=	gram per cubic centimetre
g/m ²	=	gram per square meter
h	=	hour
HDPE	=	high density polyethylene
HMG	=	His Majesty's Government of Nepal
HP	=	horse power
IDA	=	International Development Association
IS	=	Indian Standard
ISO	=	International Standard Organisation
kg	=	kilogram
kg/cm ³	=	kilogram per cubic centimetre
kg/cm ²	=	kilogram per square centimetre
km	=	kilometre
kN	=	kilo Newton
KVA	=	kilo volt ampere
l	=	litre
m	=	meter
m ²	=	square meter
m ³	=	cubic metre
mg/l	=	milligram per litre
min	=	minute
mm	=	millimetre
m/min	=	metre per minute
m ³ /d	=	cubic metre per day
m ³ /min	=	cubic metre per minute
m/s	=	metre per second
mm/s	=	millimetre per second
N	=	Newton
ND	=	nominal diameter (=DN)
NEA	=	Nepal Electricity Authority
nm	=	nanometer
N/mm ²	=	Newton per square millimetre
NWSC	=	Nepal Water Supply Corporation
OMC	=	Optimum moisture content
PC	=	personal computer
pH	=	hydrogen concentration (acidity)
ppm	=	parts per million
RC	=	reinforced concrete
r/min	=	revolution per minute

s	=	second
SI	=	Système International d'Unités
Si	=	silicon
T	=	temperature
t	=	metric ton
uPVC	=	unplasticised polyvinyl chloride
V	=	Volt
W	=	Watt
°C	=	centigrade
°	=	degree
"	=	inch
%	=	percent
4WD	=	four wheel drive
<	=	smaller/less than
>	=	larger/more than
OPC	=	Ordinary Portland Cement

TECHNICAL SPECIFICATION

1. 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, decision of the Engineer shall be considered as final and binding.
- 1.2 The work shall be related to the drawings, which the contractor is presumed to have studied. Nothing extra will be paid for 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.
- 1.3 The sources 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.
- 1.3.1 Where terms "Engineer", "Contractor", "Works" etc. are used, they shall have the meaning defined in the Conditions of Contract or defined in the subsequent specification.
- 1.4 "Employer" shall mean **Nepal Electricity Authority Distribution & Consumers Services Directorate Biratnagar Regional Office, Taplejung Distribution Center, Taplejung**
- 1.5 "Site Engineer" shall mean the employees deputed by the Employer.
- 1.5.1 The requirements of specifications under (2) General (3) Materials shall be fulfilled by the Contractor without extra charge including transportation or any other taxes involved that is the item rates quoted shall be deemed to have taken these into account.

2. GENERAL OFFICIAL ACCESSORIES

2.1.1 Drawing, Instructions & Measurements

All the work shall be done according to the drawings and instructions of the Site 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 Site Engineer, any work or position 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.

2.2 Preparing & Cleaning Site

The site described and shown on the drawing 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. Also the Contractor shall dress the site 3m, all round the building after completion, maximum cutting or filling being 300mm.

2.3 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 Site Engineer.

2.4 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.

2.5 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 Site Engineer.

2.6 Leave Clean

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

2.7 Samples

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

2.8 Provisional Items

All provisional items in the schedule shall be carried out at the discretion of the Site 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.

2.8.1 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 at the site of work.

3.0 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 Engineer in writing. The materials shall be manufactured, handled and used in a workman like manner to ensure completed work in accordance with the Contract.

3.2 Sources

The source of materials should be selected and notified to the 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 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 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.

3.3 Inspection and Acceptance of Materials

Final inspection and acceptance of materials will be made only at the site of the work. The 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 Site Engineer at the source shall not relieve the contractor of the responsibility of furnishing materials, which comply with these specifications. The Site Engineers 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 Engineer prior to commencement of work.

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 for those materials, which have a satisfactory record of compliance with the Specifications may, at the discretion of the Engineer.

When required by the Site Engineer, preliminary samples of the character and quantity prescribed shall be submitted by the Contractor or producer for examination. 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 inspections prescribed in these Specifications.

3.5 Defective Materials

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 Site Engineer. Upon failure of the Contractor to comply promptly with any order of the Engineer given under this Clause, the Site 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.

4.0 Earthwork in excavation in foundation:

A. **Excavation:**

Foundation trenches shall be dig pit to the exact width of foundation concrete and the sides shall be vertical. If the soil is not good and does not permit vertical sides, the sides shall be sloped back or protected with timber shoring. Excavated earth shall not be placed within 1 m (3') of the edge of the trench.

B. **Finish of trench:**

The bottom foundation trenches shall be perfectly levelled both longitudinally and transversely and the sides of the trench shall be dressed perfectly vertical from bottom up to at least thickness of loose concrete so that concrete may be laid to the exact width as per design. The bed of the trench shall be lightly watered and well rammed for Brickbats or Stone Soling, works. Excess digging if done through mistake shall be filled with concrete. Soft or defective spots shall be dug out and removed and filled with concrete or with stabilized soil. If rock or boulders are found during excavation, these should be



removed and the bed of the trenches shall be levelled and made hard by consolidating the earth. The Engineer shall not lay foundation concrete before the inspection and approval of the trench.

C. Finds:

Any treasure of valuables or materials found during the excavation shall be property of the Government. Water, if

Any accumulates in the trench shall be baled or pumped out without any extra payment and Necessary precautions shall be taken to prevent surface water to enter into the trench.

D. Trench filling:

After the concrete has been laid and masonry has been constructed, the remaining portion of the trenches shall be filled up with earth in layers of 15 cm (6") and watered and well rammed. The earth filling shall be free from rubbish and refuse matters and all clods shall be broken before filling, surplus earth not required shall be removed and disposed, and site shall be levelled and dressed.

E. Measurement:

The measurement of the excavation shall be taken in cum as for rectangular trench, bottom width of concrete multiplied by the length of trenches even though the contractor might have excavated with sloping sides for his convenience. Rate shall be for complete work 30 m (100 ft) lead and 1.50 m (5ft) lift, including all tools and plants required for the completion of the works. For every extra lead of 30 m any every extra lift of 1.5 m separate extra tare is provided.

5.0 PLAIN CEMENT CONCRETE (PCC FOR RCC)

Scope this specification deals with the cement concrete, plain or reinforced for general use of specified proportion. NBC 110-2050 or IS Code: 456 of Practice (latest revision) to be complied with unless permitted otherwise herein after.

5.1 Material

5.1.1 Aggregates:

Aggregates for the concrete shall be obtained from an approved source, shall confirm with the requirements of NBC 101/2060 (Latest revision) specification for coarse and fine aggregates from natural sources and shall be washed clean. For fine aggregates any of the Grading Zones 1, 2 and 3 will be accepted except Grading Zone 4. Aggregates shall have water absorption not exceeding two percent when tested in accordance with IS 2386 (Latest revision).

Sampling and testing of aggregates shall be carried out in accordance with the requirements of the appropriate section of IS 2386. The Contractor shall satisfy the Engineer that the aggregates to be supplied will not give to an alkali reaction with the cement.

Before work on preliminary and trial mixes of concrete is commenced, the Contractor shall submit for approval samples of fifty kilograms in weight of each aggregate which he proposes to use, the samples when approved by the Engineer shall remain preserved at the site for reference.

5.1.2 Storage of Aggregates

The Contractor shall provide means of storing the aggregates at each point where the concrete is made such that (a) each nominal size of coarse aggregate and the fine aggregate shall be kept separated at all times (b) contamination of the aggregates by the ground or other foreign matter shall be effectively prevented at all times and (c) each heap of aggregate shall be capable of drainage freely.

The Contractor shall ensure that the graded coarse aggregates are tipped, stored and removed from the store in manner that does not cause segregation.

Wet fine aggregate shall not be used until, in the opinion of the Engineer, it has drained to a constant and uniform moisture content, unless the Contractor measures the moisture content of the fine aggregate continuously and adjusts the amount of fine aggregate and the added water in each batch of concrete mixed to allow for the water contained in the fine aggregate. If necessary to meet the requirements of this clause, the Contractor shall protect the heaps of fine aggregate against adverse weather.



Handwritten signature in Nepali script.

The Contractor shall make available to the Engineer such samples of the aggregate, as he requires. Such samples shall be collected at the point of discharge of the aggregate to the batching plant. If any such sample doesn't confirm with the specification, the aggregate it represents shall be promptly removed from the site and the Contractor shall carry out such modifications to the storage arrangements as may be necessary to secure compliance with the specification.

5.1.3 Water

Water for concrete shall be clean and free from injurious amounts of oils, acids, salts, sugars, organic materials or other substances that may be deleterious to concrete or steel. Whenever required to do so by the Engineer, the Contractor shall take samples of the water being used or which it is proposed to be used for mixing concrete and test them for quality. The details of test shall be as per the recommendations in the **IS: 3025-1964** (latest revision).

Permissible limits, maximum for Solids

Organic	200mg/l
Inorganic	3000mg/l
Sulphates	500 mg/l
Chlorides	2000mg/l for PCC works And 1000mg/l for RC works
Suspended matter	2000mg/l

5.1.4 Cement

The cement shall be ordinary Portland cement of approved brand and manufacture and shall comply in all respects with the NS 49/2041 and IS: 8112 (latest revision) for ordinary Portland cement. It shall be delivered on the site in packages with an unbroken seal fixed by the makers and plainly marked with the name of brand and date of manufacture. It shall be stored in a dry place, in regular piles not exceeding ten 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 IS.

5.1.5 Admixture

Admixture shall mean material added to the concrete materials during mixing for the purpose of altering the properties of the concrete mix.

If the Contractor wishes to use admixtures, otherwise than as expressly ordered by the Engineer, he shall first obtain the Engineer's written permission. The methods of use and the quantities of admixture used shall be subject to the Engineer's approval, which or otherwise shall in no way limit the Contractor's obligations under the Contract to produce concrete with the specified strength and workability. The engineer may order not to use any admixtures, if required.

IS and BS grading requirements for Coarse Aggregate

IS Sieve	Percentage passing for single sized aggregate of nominal size						Percentage passing for graded aggregate of nominal size				
	Designation	63mm	40mm	20mm	16mm	12.5mm	10mm	40mm	20mm	16mm	12.5mm
80mm	100	-	-	-	-	-	-	-	-	-	-
63mm	85-100	100	-	-	-	-	-	-	-	-	-
40mm	0-30	85-100	100	-	-	-	-	95-100	100	-	-



Handwritten signature

20mm	0-5	0-2	85-100	100	-	-	30-70	95-100	100	100
16mm	-	-	-	85-100	100	-	-	-	90-100	-
12.5mm	-	-	-	-	85-100	100	-	-	-	90-100
10mm	-	0-5	0-20	0-30	0-45	85-100	10-35	25-55	30-70	40-85
4.75mm	-	-	0-5	0-5	0-10	0-20	0-5	0-10	0-10	0-10
2.36mm	-	-	-	-	-	0-5	-	-	-	-

IS, BS and ASTM grading requirements for Fine Aggregate

Percentage Passing (By Weight)					
IS Sieve Designation	Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV	Standard C.33-57
10mm	100	100	100	100	100
4.75mm	90-100	90-100	90-100	95-100	95-100
2.36mm	60-95	75-100	85-100	95-100	80-100
1.18mm	30-70	55-90	75-100	90-100	50-85
600 micron	15-34	35-59	60-79	80-100	25-60
300 micron	5-20	8-30	12-40	15-50	10-30
150 micron	0-10	0-10	0-15	0-15	2-10

5.2 Grades of Concrete

5.2.1 General

Structural concrete shall be either ordinary or controlled and in three grades designated as **M150 (M15 in SI unit)**, **M200 (M20 in SI unit)** and **M350 (M35 in SI unit)**, as specified in NBC 110-1994 – latest revision.

Ordinary Concrete

Ordinary concrete is recommended only when accurate control is impracticable and not necessary. However, if ordinary concrete is allowed by the Engineer, it shall be used only in the concrete of Grades M150, M200 and M350. Ordinary concrete does not require preparation of trial mixes.

Concrete mix proportion for ordinary concrete shall be as per NBC 110-1994 or IS: 456 - latest revision – and as follows:

Mix Proportion (By Weight) Expected to Give Degrees of Workability with Different Water Cement Ratios and Specified Strength

(For Guidance)						
Workability	Water Cement Ratio	Compressive Strength in 28 days kg/cm ²	Ratio by Weight of Cement to Gravel Aggregate		Ratio by Weight of Cement to Crushed Stone Aggregate	
			20mm size	38mm size	20mm size	38mm size
Very low Slump 0-25mm	0.4	360	1:4.8	1:5.3	1:4.5	1:5.0
	0.5	290	1:7.2	1:7.7	1:6.5	1:7.4
	0.6	220	1:8.5	1:8.6	1:7.8	1:8.4
	0.7	160	1:9.0	1:9.0	1:8.7	1:8.9
Very low Slump	0.4	360	1:3.9	1:4.5	1:3.5	1:4.0
	0.5	290	1:5.5	1:6.7	1:5.0	1:5.5



Handwritten signature

25-30mm	0.7	160	1:8.0	1:8.5	1:7.4	1:8.0
Medium Slump	0.4	360	1:3.5	1:3.8	1:3.1	1:3.6
25-100mm	0.5	290	1:4.8	1:5.7	1:4.2	1:5.0
High Slump	0.7	160	1:6.8	1:7.9	1:6.2	1:7.0
100-175mm	0.4	360	1:3.2	1:3.5	1:2.9	1:3.3
	0.5	290	1:4.4	1:5.2	1:3.9	1:4.6
	0.6	220	1:5.4	1:6.7	1:4.7	1:5.7
	0.7	160	1:6.2	1:7.4	1:5.5	1:6.5

Notwithstanding anything mentioned herein before, the maximum total quantity of aggregates by weight per 50 kg. of cement shall not exceed 150 kg. except where otherwise specifically permitted by the Engineer.

The minimum cement content for each grade of concrete shall be as follows:

Grade of Concrete	Minimum Cement Content per cum. of Finished Concrete
M150	325 kg
M200	360 kg
M250	420 kg
M350	-----

At least four trial batches are to be made at site during casting and six test cylinders/cubes taken for each batch noting the slump on each mix. These cylinders/cubes shall be tested in a testing laboratory approved by the Engineer at 7 days and others at 28 days for obtaining the unlimited compressive strength. The test reports shall be submitted to the Engineer. The cost of the mix design and testing shall be borne by the Contractor.

On the basis of the above test reports, proportion of mix by weight and water – cement ratio will be approved by the Engineer; the proportions so decided for different grades of concrete shall be adhered to during all concreting operations. If, however, at any time, the Engineer feels that the quality of the materials being used, has been changed from those used for preliminary mix design, the Contractor shall have to run similar trial mixes design, and the Contractor shall ascertain the mix proportion and water – cement ratio for obtaining the desired strength and consistency. It will be within the competency of the Engineer to reduce the number of trial batches and the number of test specimens mentioned above.

The mixes once approved must not be varied without prior approval of the Engineer.

In **designing the mix proportions** of concrete, the quantity of both cement and aggregate shall be determined by weight. The Engineer may allow the quantity of aggregates to be determined by equivalent volume basis after the relationship between the weight and volume is well established by trial and the same shall be verified frequently. If the design mix is allowed, the proportion of aggregate, sand and cement shall be determined as per design concrete grade.

Water shall be either measured by volume in calibrated tanks or weighted.

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

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

5.3 Strength Requirement

Where ordinary Portland cements confirming to NS 49/2041 (latest revision): Ordinary Portland Cement /IS: 269-latest revision is used, the compressive strength requirements for various grades of concrete shall be as shown in Table – IV and shall apply to both controlled concrete and ordinary concrete.

The acceptance of strength of concrete shall be as per clause in “Sample size and Acceptance Criteria” of NBC 110-1994 – latest revision / IS-456 (latest revision) subject to the stipulations and/or modifications stated elsewhere in this specification.



Handwritten signature

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

Compressive strengths for different grades of concrete as specified in Table – IV shall always refer to the cylinder/cubes strength based on test conducted on 15cm diameter and 30cm height or strength of cylinder based on test conducted on 15cm X 15cm X 15cm cube. Other requirements of concrete strength as may be desired by the Engineer shall be in accordance with NBC 110-1994/IS 456 (latest revision).

In exceptional circumstances, the Engineer may accept a concrete of lower strength than specified and which is otherwise unacceptable according to the “Acceptance Criteria” of NBC 110-1994/ IS 456 – (latest revision), provided the strength is never less than 80% of the specified strength. All concrete having strength less than 80% of that specified shall always be rejected. Payment for concrete of lower strength than specified or approved by the Engineer shall always be made at a reduced rate on pro- rata basis to the strength obtained.

Strength Requirement of Concrete

Grade of Concrete	Compressive strength of 15cm diameter and 30cm high cylinder or 15cm cube at 28 days after mixing, conducting in accordance with NBC 110-1994 – latest revision	
	Preliminary test kg/cm ²	Work test kg/cm ²
M150	200	150
M200	260	200
M250	320	250
M350	430	350

With permission of the Engineer, for any of these above mentioned grades of concrete shall also be increased proportionately to keep the ratio of water to cement same as adopted in trial mix design for each grade of concrete. No extra payment for the additional cement will be made.

5.4 Workability

The workability of the concrete shall be checked at frequent intervals by slump test. Where facilities exist and if required by the Engineer, alternatively, the compacting factor test in accordance with IS: 1199 – (latest revisions), shall be carried out. The degree of workability necessary to allow the concrete to be well consolidated and to be worked into the corners of formworks and around on the type and nature of structure and shall be based on experience and tests within the preferred limits of consistency as specified in Table below for various types of structures.

Limits of Consistency

Degree of Workability	Slump in mm		Use for which concrete is suitable
	Min.	Max	
Low	20	40	Mass concrete foundations without vibrations, simple reinforced section with vibration.
Medium	50	100	Normal reinforced beams, columns, slabs without heavily reinforced section with vibration.
High	100	150	Section with congested reinforcement not normally suitable for vibration.

Note: However, the slump to be obtained for work in progress shall be as per direction of the Engineer.



Handwritten signature

5.5 Load Test

Load test of structural members may be required by the Engineer when the strength of job control cylinders/cubes falls below the required strength and is not acceptable as per "Acceptance Criteria" of NBC 110-1994 – (latest revision). If the load testing is decided by the Engineer, the member under consideration shall be subjected to a superimposed load equal to one and quarter (1¼) times the specified superimposed load used for design and this load shall be maintained for a period of 24 hours before removal. The detailed procedure of the test is to be decided by the Engineer.

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

The entire cost of load testing shall be borne by the Contractor. If a portion of the structure is found to be unacceptable, it shall be dismantled and replaced by a fresh structure as per specification. The cost of dismantling and the cost of concrete, formwork and reinforcement involved in the dismantled portion shall not be paid to the Contractor.

If in the course of dismantling, any damage is done to the embedded items and or other adjacent structures, the same shall be made good free of charge by the Contractor to the satisfaction of Engineer.

5.6 Workmanship

5.6.1 General

All workmanship shall be according to the latest and best possible standards.

5.6.2 Mixing of Concrete

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

Concrete shall be always mixed in a mechanical mixer unless specifically approved by the Engineer for concrete to be used in unimportant structure. The water shall not be poured into the drum of the mixer until all the cement and aggregates constituting the batch are already in the drum and mixed for at least one minute. Mixing of each batch shall be continued until there is uniformity in colour and consistency, but in **no case shall mixing be done for less than two minutes** and at least forty revolutions after all the materials and water are in the drum. When absorbent aggregates are used or when the mix is very dry, the mixing time shall be extended as may be directed by the Engineer. Mixer shall not be loaded above their rated capacity as this prevents thorough mixing.

The entire contents of the drum shall be discharged before the ingredient for the next batches are fed into the drum. No partly set or remixed or excessively wet concrete shall be used and it shall be immediately removed from site.

Each time the work stops, the mixer shall be thoroughly cleaned and when the next mixing commences, the **first mix shall have 10% additional cement** at no extra cost to the Employer to allow for loss in the drum.

When **hand mixing** is permitted by the Engineer for concrete to be used in unimportant structures, it shall be carried out on a watertight platform and care shall be taken to ensure that mixing is continued until the mass is uniform in colour and consistency. In case of hand mixing, **extra cement @ 10%** shall be added to each batch with no extra cost to the employer. **However, the engineer may not allow the hand mixing for concrete at all.**

5.6.3 Conveying Concrete

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

5.6.4 Placing Concrete

Formwork and reinforcement shall be approved in writing by the Engineer prior to placing of concrete. Concrete shall be placed in its final position without segregation. The forms shall be well wetted and all shavings, dirt and water that may have collected at the bottom shall be removed before concrete is placed. The interval between adding the water to the dry materials in the mixer and the completion of the final placing inclusive of compaction of the concrete shall be not more than initial setting time of the cement, normally 30 minutes for ordinary Portland cement. The concrete shall be well placed in the formwork by means approved by the Engineer and shall not be dropped from a height or handled in a manner, which may cause segregation. Any drop above 180cm shall have to be approved by the Engineer. Once the concrete is placed, it shall not be disturbed. After the concrete has been placed, it shall be spread and thoroughly compacted by approved mechanical vibration to a maximum subsidence without segregation and thoroughly worked around reinforcement or other embedded fixtures into the concrete form and shape. Vibration shall not be used for pushing and shovelling on concrete. Vibration must be operated by experienced men and over vibration shall not be permitted. Hand tamping in some cases may be allowed subject to the approval of the Engineer.

No concrete shall be placed in open, while it rains. If there has been any sign of separation of cement and sand by washing, the concrete shall be entirely removed immediately. Suitable precautions shall be permitted on freshly laid concrete. Slabs, beams and similar members shall be poured in one operation normally. Bleeding of under layer, if any, shall be effectively removed. Moulding, drip coarse, etc. shall be poured as shown on the drawing or as directed by the Engineer. Holes shall be provided and bolts sleeve, anchors fastenings or other fixtures shall be embedded in concrete as shown on the approved drawings or as directed by the Engineer. Any deviation from the drawing shall be set right by the Contractor at his own expenses as instructed by the Engineer.

5.6.5 Construction Joints

When the work is to be interrupted, the concrete shall be rebated at the joint to such shape and size as may be required by the Engineer or as shown on the drawing. All vertical construction joints shall be made step boards, which are rigidly fixed and slotted to allow for the passage of the reinforcing steel. If desired by the Engineer, keys and/or dowel bars shall be provided at the construction joints. In the case of water retaining structure water stops of approved materials shall be provided if so specified in the drawings or desired by the Engineer. Construction joints shall be provided in positions as described, the joints shall be in accordance with the followings;

In a column, the joints shall be formed about 75mm below the lowest soffit of the beams forming into it.

Concrete in a beam shall be placed throughout without a joint, but if the provision of a joint is unavoidable, the joint shall be **vertical at the middle** of the span. A joint in suspended floor slab shall be vertical at the middle of the span at right angle to the principal reinforcement. The locations of construction joint shall be planned by the Contractor well in advance of pouring and will have to be approved by the Engineer.

Before fresh concrete is placed, the cement skin of the partially hardened concrete shall be thoroughly removed and surface made rough by hacking, sand blasting, water jetting, air jetting or any other method as directed by the Engineer. The rough surface shall be thoroughly wetted for about two hours and shall be dried and coated with 1:1 freshly mixed cement sand slurry before placing the new concrete. The new concrete shall be worked against the prepared



Handwritten signature in Nepali script.

surface before the slurry sets. Special care must always be taken to see that the first layer of concrete placed after a construction joint is cold. Joints during pour shall be treated with 1:1 freshly made cement sand slurry only after removing all loose materials.

5.6.6 Protection and Curing of Concrete

Newly placed concrete shall be protected by approved means from rain, sun and wind. As the concrete has hardened sufficiently for the surface to be marked, it shall be covered either with sand, Hessian, canvas or similar materials and kept continuously wet for at least fourteen days after final setting. This period may be extended at the discretion of the Engineer.

5.6.7 Control Tests on Concrete

Six test cylinders/cubes for each type of work shall be taken by the Contractor for each 8 hours or less of concreting. If the value of concrete poured is less than 20m³ on any day per mixing plant, the Engineer may exempt or reduce the number of test cylinders/cubes. The samples of concrete shall be tested in approved laboratory in presence of the Engineer and the test results shall be submitted in triplicate to the Engineer. The Contractor shall carry out the sampling and testing according to the provisions of this specification at his own cost. No payment shall be made for the concrete used in specimens.

To control the consistency of concrete from every mixing plant, slump tests shall be carried out by the Contractor free of charge every two hours or as directed by the Engineer. The amount of mixing water shall not be changed without prior approval of the Engineer. Slumps corresponding to the test cylinders shall be recorded for reference. The Engineer if he so desires may order special tests to be carried out on cement, sand or coarse aggregate, water, reinforcing steel, or traverse tests in accordance with NBC or I.S. recommendations. If the materials tested are found to be suitable for the intended use, the cost of these special tests shall be borne by the employer. If the material is found to be not suitable for the intended use the cost of these special tests shall be borne by the Contractor. Further, during the progress of the work if the Engineer has doubt about the quality of any material in use he can instruct suspension of its use till the material is proved acceptable by test. Any consequent loss arising out of the suspension shall be borne by the Contractor.

5.6.8 Exposed Surface

Interior

Imperfect surface, where strength is not required shall be patched and rubbed smooth with carborondum stone, immediately after the formwork is stripped off, fins and projections shall be removed and the concrete surface affected thereby shall be rubbed smooth to the satisfaction of the Engineer.

Anchor Bolts, Anchors, Openings, Sleeves, Insets and Other Built – in Fixtures

The Contractor shall leave all openings, grooves, chases etc. in concrete work as shown on the drawings or as specified by the Engineer. He shall build into concrete work all the materials noted below and shall embed and secure the same as and when required. The material is required to be supplied by the Contractor, shall be of best quality available of approved manufacture and shall be up to the satisfaction of the Engineer.

Material to be embedded

- i) Inserts, hangers, opening frames, manholes, covers, floor clips, sleeves and conduits.
- ii) Anchor bolts and plates for machinery, equipment and for structural steel work
- iii) Dowels bars, etc. for concrete work falling under scope of future works.
- iv) Lugs or plugs for door and window frames occurring in concrete work
- v) Flashing and jointing in concrete work
- vi) Any other built – in fixtures as may be required

Correct location, exact alignment, etc. of all these shall be entirely the responsibility of the Contractor.

5.6.9 Expansion & Isolation Joints etc.

Expansion Joints and Isolation Joints: Expansion joints in concrete structures shall be provided at specified places as indicated on the drawings. The materials and types of joints shall be as specified below. In case of liquid retaining structures, additional precaution shall be

taken to prevent leakage of liquids as may be specified on the drawings or as directed by the Engineer. The Engineer may demand test certificates for the materials and/or get them tested.

Bitumen Boards: Bitumen impregnated fibre of approved manufacture as per NBC / IS: 1838 – latest revision shall be used as fillers for expansion joints. It must be durable and waterproof. At the exposed end, the joint shall be sealed with approved sealing compound to a depth of 25mm after application of an approved primer. The sealing compound and the primer shall be applied as specified by the manufacturer

Bitumen Compound: The gap for expansion joints shall be thoroughly cleaned and the bitumen compound laid as per manufacture specifications. The compound to be used shall be of approved manufacture and shall conform to the requirement of NBC / IS: 1834 – latest revision.

Separation Joints: Strong and tough alkathene sheet or equivalent of about 1mm in thickness as approved by the Engineer shall be used. It shall be stuck by an approved sticker to the cleaned surface of the already set concrete to cover it fully. Fresh concrete shall be laid against the sheet, care being taken not to damage the sheet in any way.

Rubber Pad: Hard foundation quality rubber pads of required thickness and shape are to be placed below machine or other foundations where required as shown on the drawings or as directed by the Engineer. The rubber shall be of best quality of approved manufacturer, durable, capable of absorbing vibration and must be chemically inert continue unbroken in contact with moist or dry earth under normal conditions.

5.6.10 Waterproofing Joints

The materials shall conform to the respective NBC or IS Code – latest revision, where applicable. The Engineer’s approval to the materials shall be obtained by the Contractor before procurement. If desired by the Engineer, test certificates for the materials shall be submitted by the Contractor. The materials shall be of best quality available indigenously, fresh and thoroughly clean.

5.6.11 Water Proofing Admixture

In Concrete: The admixture shall be of right variety and procured freshly. The admixture shall be approved by the Engineer. The method of application and other details shall exactly conform to the manufacturer specification. The concrete shall have the services of the manufacturer supervision at no extra expense to the Employer to supervise the work if desired by the Engineer.

In plaster: The concrete surface to be plastered shall be hacked to the Engineer’s satisfaction. The plaster shall be made of cement and sand as approved by the Engineer. If desired by the Engineer, the Contractor shall have the work supervised by the manufacture supervisor at no extra cost to the employer.

5.6.12 Other Admixture in Concrete

The Engineer may or may not in his direction, allow the Contractor to use any admixture in the concrete.

No Payment shall be made extra over the price on concrete for these admixture, whatsoever.

5.6.13 Measurement and Rates

The measurement shall be done in **cubic meter** calculated as per the drawing. The rates for items shall include cost of all materials consumed in the work at all levels, hire charges of materials, tools and plant, cost of labour, insurance, all transport, services, accommodations, supervision, storage, protection etc. all complete.

5.6.14 REINFORCEMENT WORK

5.6.15 Scope:

Supplying and fixing Thermo Mechanically Treated (TMT) steel (Grade Fe500 TMT) reinforcement in RCC work including bending, bending with wires, placing in position including the cost of binding wires, as per Drawing, specification and instruction of engineer.....kg/MT.



5.6.16 Reinforcement Bar

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 bar of the fore – going description shall comply with appropriate parts of NS 191-2046/NS 501-2058 / IS 1786 and IS Standards Nos. 432 – 1966 (or latest version), 139 – 1966 (or latest version) and 1786 – 1966 (or latest version) for TMT bars, Mild Steel and Deformed Steel respectively.

Reinforcement bar shall be free from pitting due to corrosion, loose rust, mill scale, paint, oil, grease, adhering earth, ice or other materials that may impair the bond between the concrete and the reinforcement or that may in the opinion of the Engineer’s Representative cause corrosion of the reinforcement or cement grout shall not be permitted.

Bars Recommended are as follows:

TMT Bars Fe 500 grade: for non structural members, slabs, staircase, foundation footings, Beams and columns or as per drawings.

5.6.17 Certificate and tests for reinforcement bars

For each consignment of reinforcement bars 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 NBC 101-1994 / IS code.

The Engineer’s Representative shall select as many test pieces as he deems necessary where the reinforcement bars are supplied for which the makers test sheet or other records are not available, or where in the opinion of the Engineer’s Representative materials have been subject to corrosion or other bad effect 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.

5.6.18 Dimensions of reinforcement bars

The size of reinforcement bars described on the Working Drawings or elsewhere shall be the minimum and the rolling margin and other tolerance shall be wholly above this size. The length of a reinforcement bar shall be not less than the length on the Drawing or elsewhere and shall not be more than 50mm. in excess of that length. Bar bending schedule shall be prepared by the Contractor and submitted for approval of the Engineer’s Representative. Such schedules shall be prepared based on reinforcement details, prior to the execution of the work. Nothing extra shall be paid for this.

5.6.19 Bending of reinforcement bars

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 bend or internal dimensions of bending or the like shall be within a tolerance of 30mm. Any discrepancies or inaccuracies found by the Contractor in the Drawings or other documents shall be immediately reported to the Engineer whose interpretation and requirements relating there to shall be accepted. The internal radius of bends shall be not less than twice the diameter of the bars unless described to the contrary on the bending lists or elsewhere in the Drawing. Hooks and other end anchorage bends for mild steel shall be bent to an internal radius of twice the diameter of the bar. This internal radius of the bends of corner binders or stirrups or links shall be half. Bars which have been bent shall not be straightened or re-bend for incorporation in the works without the prior approval of the Engineer’s Representative.

5.6.20 Fixing reinforcement bars

Reinforcement bars shall be accurately fixed and by approved means and maintained in the position described. 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 thereto.

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



member shall be assembled and fixed in the form of a rigid cage or skeleton before placing in the moulds or formwork. Lap length should not be less than development length.

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

Reinforcement projecting from work being concreted or already concreted shall not be bent nor correct its position for any reason unless approved and shall be protected from deformation in future. Extensions shall be thoroughly coated with cement grout wash or encased in concrete or otherwise protected from corrosion as instructed.

5.6.21 Cover of Concrete and Spacing of bars

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

- **Horizontal, vertical or inclined slabs:** 20mm or the size of the bars whichever is greater
- **Short Lintels:** 20mm or the size of the bar whichever is greater
- **Beams:** 25mm or the size of the main bars whichever is greater. Binders and the like 15mm minimum.
- **Columns:** Main bars for columns not exceeding 20mm diameter shall be 35mm and the main bars in columns exceeding 20mm diameter shall be 40mm or the size of the main bars whichever is greater. Rectangular binders or links or helical binding, 15mm minimum.
- **Footing:** 50mm minimum.

5.6.22 Measurement

For the purpose of ascertaining payments due to the Contractor the basis of measurements of reinforcement bars used in the Works shall be the calculated by weight in Kg or (MT). which shall be computed from the size and lengths of the bars (not binding wires) described on the Working Drawings or elsewhere. No allowance in the weight shall be made for cutting to waste, rolling margin, extra length or other tolerance. The Contractor is deemed to have taken this factor into consideration and quoted accordingly in the tender. The Contractor's rate for unit weight of bars 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 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 diameter for each hook for mild steel, deformed steel) shall be added to the finished length to arrive at the length of the bar for cutting and measurement.

6.0 FORMWORK

6.1.1 Design

Formwork shall be designed and constructed so that concrete can be properly placed and thoroughly compacted. Formwork shall be firmly supported and adequately strutted, braced, or tied. The formwork shall be needed for normal, **ornamental or ribbed slab** as per design. 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 Engineer drawings and calculations for the formwork he proposes to use.

6.1.2 Material

Material used for formwork in various parts of the structure shall be as follows:

<u>Part</u>	<u>Materials</u>
Foundations	12mm thick waterproof Ply Board



Beams, Cornice and Slab 12mm thick waterproof Ply Board and MS pipe props with threads for variable heights.

Curved Shape Beams and ribbed Slabs including all RCC works 12mm thick waterproof Ply Board cut in strips, and MS pipe props with threads for variable heights.

All forms shall be built watertight and of materials of sufficient strength to hold the concrete without bulging between supports.

All forms shall conform accurately to the shape lines and dimensions shown on the Contract Drawings, account being taken of camber where required.

All forms shall be securely braced to maintain their true position and form.

All forms shall be checked frequently during the pouring operations and until removed so that they may be driven up if any settlement occurs.

6.1.3 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 Engineer to allow for the elastic deflection of structural members and deflection due creeping 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.

6.1.4 Supports

Formwork shall be constructed so that the formwork to the side's members can be removed without distributing 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 injury to the concrete. Supports shall be carried to construction, which is sufficiently strong to afford the necessary support without injury to any portion of the structure. This may mean in some cases that it is carried down to the foundations or other suitable base. Steel props and bracing shall be provided for the temporary support of composite construction where separately specified.

6.1.5 Joints and edges

All joints in the formwork shall be close fitting to prevent leakage of grout 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, arises or edges. Where chambers are shown on to provide a smooth and continuous accurate alignment at sides and provide a clean line at construction joints in the concrete these shall be fixed with their joints either vertical or horizontal, unless otherwise specified.

6.1.6 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, ducts, voids and chases for civil, sanitary, electrical services and for building in pipes, conduits, lifts and other fixings, as shown on the drawings.** The material and position of any ties passing through the concrete shall be to the Engineer's approval. 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 composition.

6.1.7 Cleaning and treatment of formwork

Space to be occupied by concrete shall be free from all rubbish, chipping, shaving, 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 Engineer's Representative. Formwork shall be thoroughly cleaned after each use. Damaged or distorted formwork shall not be used.

6.1.8 Striking or 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 off 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 arise 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.

6.1.9 Time of Formwork

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

6.1.10 Removal of Forms

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

Forms for various types of structural component shall not be removed before the minimum periods specified below, which shall also be subjected to the approval of the Engineer.

Ordinary Portland Cement Concrete			Rapid Hardening Portland Cement Concrete		
Temp (°C)	40 - 20	20 - 5	40 - 20	20 - 5	
Part of Structure	Days	Days	Days	Days	
a. Column & Walls	1	2	1/2	2	Do not remove forms until site cured test cylinders develop 50% of 28 days strength
b. Beam Sides	2	4	1	3	
c. Slabs 125 mm	7	14	4	7	
d. Slab below 125 mm	14	28	8	14	
e. Soffit of main beam	21	28	10	16	

Before removing any formwork the Contractor must notify the Engineer well in advance to enable him to inspect the concrete if he so desires.



6.1.11 Tolerance

The formwork shall be so made as to produce a finished concrete true to shape, lines, levels, plumb and dimensions as shown on the Drawings subject to the following tolerance unless otherwise specified elsewhere in this Specification or Drawings or directed by the Engineer.

a. Sectional dimension	- 5mm
b. Plumb	- 1 in 1000 of height
c. Levels	- 3mm before any deflection has taken place

6.1.12 Re – use of forms

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

6.1.13 Classification

Ordinary exterior grade plywood of good quality shall be used for formwork. Where an especially good finish is required and shall be made mostly of approved brand of heavy quality plywood to produce a perfectly level, uniform and smooth surface. Re-use only may be permitted after special inspection and approval by the Engineer. He may also permit utilization of used plywood for the “ordinary” class.

6.1.14 Ornament

These shall be used where ornamental and curved surface are required and shall be of selected best quality well seasoned timber which can be shaped as required. Generally, the “ordinary” class formwork shall be used elsewhere unless otherwise directed by the Engineer.

6.1.15 Rate

Rate shall include for all necessary material and labour to execute the formwork.

6.1.16 Measurement

Measurement for payment shall be done of the area on which centering shuttering has been carried out. 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.

7.0 BRICKWORK

Brick work in foundation and super structure.

7.1.1 Scope

This Section covers the furnishing of all labour, materials, equipment and construction of chimney made brick works for superstructure(Ground & First floor) all complete in accordance with the Drawing details, specifications and instruction of engineer.

7.1.2 Material

7.1.1 Chimney made 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 ± 3mm in each direction. The compressive strength should be min. 7.0N/mm². The bricks shall be provided with frogs.

7.1.2 Machine made Bricks

Bricks shall be of uniform deep red or copper colour, thoroughly burnt without being vitrified, regular in shape and size and shall have sharp and square sides and edges and parallel faces to ensure uniformity in the thickness of the courses of brickwork.

The Brick shall be first class machine made bricks of quality approved by the Engineer 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 24.0cm x 11.2cm x 5.7cm unless otherwise specified, with a tolerance of ± 3 mm in each direction. The compressive strength should be min. 7.0N/mm².

7.1.3 *Samples*

Samples of each type of brick taken at random from the load shall be deposited with the Architect/Engineer for his approval before being used in the work. All subsequent deliveries shall be up to the standard of the sample approved.

7.1.4 *Mortar*

Cement mortar shall be of proportions specified for each type of work as specified in the drawings. It shall be composed of Ordinary Portland Cement and Sand. The ingredients shall be accurately gauged by measure and shall be well and evenly mixed together in mechanical mixer, care being taken not to add more water that is required. No mortar that has begun to set shall be used, unless otherwise specified. Mortar shall comply with NBC 202-1994-latest revision or IS 2250-1980 latest revision; Code of Practice for preparation and use of masonry mortar. Compressive strength for mortar (1:4) and (1:6) shall be respectively 7.5N/mm² and 3.0 N/mm².

7.1.5 *Cement*

Portland cement conforming to NS 49/2041 – latest revision shall be used, unless otherwise specified. Cement shall be fresh when delivered at site.

7.1.6 *Sand*

Sand shall be clean, neither too fine nor too coarse and shall fall within the grading zone III to IV given in table of IS: 382. The silt content of sand shall not exceed 5% by volume.

7.1.7 *Water*

Water used for mixing mortar shall be in accordance with of NBC 110-2050. Water shall be clean and free from oil, waste, acid or other organic matter in solution or suspension. Water shall be from approved source. Storage for the water shall be of sufficient size and as directed by the Site Engineer.

7.1.8 *Additives*

Additives like waterproofing compounds shall be of the approved type from reputed manufacture. These shall be used strictly in accordance with the manufacturer's specifications and instruction of Engineer.

7.1.9 *Mix Proportion*

- (a) For brickwork 230mm thick (230mm fair faced machine made or chimney made) and above, the mortar mix shall be in a proportion of 1:6 i.e. consisting of one part cement and 6 parts sand.
- (b) For brickwork, half brick walls (108mm dachi appa or 115mm machine made or chimney made), honey combed brickwork and hollow (cavity) walls, the mortar mix shall be in a proportion of 1:4 i.e. consisting of one part cement and four parts sand.
- (c) For brick on edge the mix shall be in a proportion of 1:4 i.e. consisting of one part cement and four part sand.

7.1.10 *Soaking of Bricks*

All bricks shall be thoroughly soaked before use, in specially prepared vats, tubes or tanks for not less than two hours and until air bubbles stop being given off. The soaked bricks shall be kept on wooden planks or platforms to avoid earth being smeared on them.

7.1.11 *Mortar Mixing*

Mixing of mortar shall be done in a mechanical mixer. The ingredients shall be accurately gauged by measure and shall be well and evenly mixed together in mechanical mixer, care being taken not to add more water that is required.

Hand mixing shall be resorted to only when specifically permitted by the Architect/Engineer. If hand-mixing is allowed, the operation shall be carried out on a clear watertight platform with the gauged materials and ten percent extra cement.

Cement and sand shall be mixed dry thoroughly and then water shall be added gradually. Wet mixing shall be continued till mortar of the consistency of a stiff paste and uniform colour is obtained.

Only the quantity of mortar, which can be used up within 30 minutes of its mixing, shall be prepared at a time. Mortar shall be used as soon as possible after mixing and before it has begun to set and in any case within 30 minutes after the water is added to the dry mixture. Mortar left unused for more than 30 minutes after mixing shall be rejected and removed from the site of work.

7.1.12 Laying Brickwork

The brick shall be built in English bond with upwards facing frog in case of 230mm thick brickwork (for chimney made and fair faced machine made bricks both).

The brick shall be built in running stretcher bond with upwards facing frog in case of half brick wall (for chimney made, traditional dachi appa brickwork and machine made both).

Each brick shall be set with bed and vertical joints filled thoroughly with mortar. Selected bricks shall be used for the exposed brickwork as specified. The walls shall be taken up truly plumb. All courses shall be laid truly horizontal and vertical joints shall be truly vertical. Vertical joints in alternate course shall come directly over the other. The thickness of brick courses shall be kept uniform and for this purpose wooden straight edge with graduation giving thickness of each brick course including joint shall be used. Necessary tools comprising of wooden straight edge, masons spirit level, square, foot rule, plumb, line and pins etc. shall be frequently and fully used by the masons to ensure that the walls are taken up true to plumb, line and levels.

Both the faces of walls of thickness greater than 23cm shall be kept in proper plane. All the connected brickwork shall be carried up nearly at one level and no partition of work shall be raised more than one meter above the rest of the work. Any dislodged brick shall be removed and reset in fresh mortar.

Before commencing any brickwork, the Contractor shall confer with other trades to ensure that all pipes, conduits, drains, sleeves, bolts, hangers, or any other materials necessary to be installed in the brickwork at the time it is built, have been fixed or provided for.

7.1.13 Joints

Bricks shall be laid that all joints are full of mortar. The thickness of joints shall be not more than 10mm. The face joints shall be raked to a minimum depth of 7mm by a raking tool during the progress of the work when the mortar is still green, so as to provide proper key for the plaster or pointing to be done. Where plastering pointing is not to be done, the joints shall be struck flush and finished at the time of laying. The face of brickwork shall be kept cleaned and mortar dropping removed.

7.1.14 Openings

Openings in brickwork for air conditioning ducts, exhaust fans, grills pipes etc. shall be provided at the time of laying brickwork without any extra cost.

After installation of piping, conduits, grills, etc. all openings left around pipes, conduits, grills etc. shall be checked and caulked with cement mortar to render the whole work vermin proof and tidily finished.

The rates quoted are deemed to be inclusive of closing such pre determined openings including erection and dismantling of scaffolding if required, the placing of inserts, collars, grills etc. to be paid separately under respective items.

7.1.15 Curing

All fresh brickwork shall be protected from the effects of sun, rain, etc. by suitable covering. All brickwork shall be kept constantly moist on all the faces for at least ten days.

7.1.16 Scaffolding

Unless otherwise instructed by the Architect/Engineer double scaffolding having two sets of vertical supports shall be provided for all building work. The supports shall be sound, strong and tied together with horizontal pieces over which the scaffolding planks shall be fixed. The Contractor shall be responsible for providing and maintaining sufficiently strong scaffolding so as to withstand all loads likely to come upon it.

7.1.17 Putlog Holes

The putlog holes (if inevitable for scaffolding) which provide resting space for horizontal members shall not be left in masonry under one metre in width or immediately near the skew backs of arches. The holes left in the masonry work for supporting the scaffolding shall be filled with bricks filled with mortar to fit the size of opening with proper beds and joints.

7.1.18 Reinforced in Brickwork

All brickwork shall be reinforced with Tor steel or equivalent reinforcement both horizontally and vertically, as per drawing and instruction of engineer. The reinforcement cleaned of rust and loose flakes with a wire brush, shall be embedded thoroughly in cement mortar at every fourth course. It shall be cast in or securely fixed to adjoining columns or walls, in a manner approved by the Engineer.

7.1.19 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.

Deduction 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 hold fasts blocks but nothing extra like form work shall be paid for embedding these. Similarly, no deductions shall be made for chimney flue left in the walls, but nothing extra shall be allowed for rendering for flue openings as specified. Unless otherwise specified nothing extra shall be admissible for cutting 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, vertical & horizontal reinforcement within brickwork, materials and labour.

8.0 PLASTERING WORKS

Cement-sand plastering on the floor, wall, ceiling, etc. of good finish including the racking of the joints, wetting the surface and curing the work all complete

8.1 Material

Cement: Ordinary Portland cement as per specification

Sand: River or pit sand as per specification

8.2 Mortar

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

8.3 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.

8.4 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. 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 Engineer/Site 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 Engineer/Site 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 Engineer/Site Engineer.

8.5 Measurement

It shall be done in square meter 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. (10sq.ft.) 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.

9.0 CEMENT PUNNING

Cement sand punning on floor, skirting etc. including wetting the surface, mixing, laying and rubbing with steel trowel to a hard smooth and shining surface and curing for quality finish all complete

9.1 Material

Cement: Ordinary Portland cement as per specification
 Sand: River or pit sand as per specification

9.2 Proportion & Mixing

As specified in the schedule.

9.3 Workmanship

The base surface shall be properly watered and cleaned of dust and dirt. A screed of c/s in the specified ratio shall be laid over it. 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 Site 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 meter of the punning as per instruction of the Site Engineer until the quality, texture and finish required is obtained and approved by the Site Engineer, after which all punning executed shall confirm with the respective approved sample. All punning shall be finished smooth, even and truly level and as per instructions of the Site Engineer. The punning shall be kept wet for 7 days.

9.4 Measurement

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

10.0 Brickwork Class I:

10.1 Bricks:

All bricks shall be of first class of standard specifications, made of good brick earth thoroughly burnt, and shall be of deep cherry red or copper colour. Bricks shall be regular in shape and their edges shall be sharp and square and shall emit clear ringing sound on being struck. And shall be free from cracks, chips, flaws and lumps of any kind. Bricks shall not absorb water more than one sixth of their weight after one hour of soaking by immersion in water. First class bricks shall have a crushing strength of 140 kg per sq.cm.

10.2 Mortar :

Mortar shall be as specified and materials of mortar shall be of standard specifications.

For cement mortar, cement shall be fresh port land cement of standard specifications. Sand shall be sharp clean and free from organic and foreign matters. For rich mortar coarse of medium sand shall be used. Proportion of cement and sand shall be 1:4 in ratio. Cement and first mixed dry to have a uniform colour in a clean masonry platform. Clean water shall be slowly and gradually added to have workable consistency and mixed thoroughly by turning at least three times. Such freshly mixed mortar shall be used for the construction purpose, which shall be used for a maximum period for one hour work only. Old and stale mortar beyond this time shall be used at all.

10.2 Soaking of Bricks.

Bricks shall be fully soaked by submerging them in a tank of water till formation of air bubble stops.

10.3. Laying of Bricks:

Brick shall be well bonded and laid in either in English bond or Flemish bond unless otherwise specified. Every course shall be truly horizontal and wall shall be truly plumb vertical. Vertical joints of consecutive course shall not come directly over one another. No damaged or broken bricks shall be used. Closer shall be of clean cut bricks shall be placed near the ends of walls but not at the outer edge. Selected best-shaped bricks shall be used for face work. Joints shall not exceed 6 mm in thickness, which shall be fully filled with mortar. Bricks shall be laid with frogs upward except in the top course where frogs shall be placed downward. Bricks shall be laid out for maximum 1 (one) meter height at a time. When one part of the wall has to be delayed, stepping of bricks shall be left at an angle of 45 degree. Corbelling or projections, where made shall be more than ¼ brick projection in one course. All joints shall be raked and faces of wall cleaned at the end of each day's work.

10.4 Curing :

The brickwork shall be kept wet for a period of at least 10 days after laying. At the end of day's work the tops of walls be flooded with water by making small weak mortar edging to contain at least 2.5 cm. (1 inch) deep water.

The brickwork shall be protected from the effects of sun, rain, frost and adverse effects of nature the construction and until such time it is fully cured.

10.5 Scaffolding:

Necessary and suitable scaffolding shall be provided to facilitate the construction of beams & pillars. Scaffolding shall be sound and strong and supports and members sufficiently strong so as to withstand all load likely to come upon them.

10.6 Measurement :

Brickwork shall be measured in cum. Different kinds of bricks with different mortar shall be taken under separate items. The rate shall be for the complete work including scaffolding and all tool and plants.

11.0 WOODWORKS IN DOOR & WINDOW FRAMES

Woodwork in frame of doors, windows, ventilators etc. with good finish of approved well seasoned sal wood including fixing with necessary hold fast etc. all complete.

11.1 Timber

Timber to be used for the work shall be form 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, deed 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 in the item. The samples of the approved timber to be used shall be deposited in the office of the Site 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 seen and approved by the 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 rejected by the Engineer Representative. 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 Site Engineer. No timber shall be painted, tarred or oiled primed without the previous permission of the 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 wrought. Maximum slope of grains shall range between 1 in 10 to 1 in 20, any timber rejected shall be removed from the site of work.

11.2 Workmanship

Timber shall be properly planed wrought and dressed in a workman like manner. 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 style or horizontal rail shall not be allowed. The unrelated edges of the frame in the opening shall be rounded or beaded uniformly. Any defects observed after installation shall be rejected. Sample of workmanship shall be submitted for approval.

Holdfasts shall be of 20 x 6 mm MS flat, one end splitted into two for anchorage into cement concrete blocks 1:2:4 to the width of the wall and the other bent up for fixing to the frame with three screws. 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 up to 1.5 m. height (four in all) and 3 on each side of the frame above 1.5 m. (six in all). The positions of the holdfasts shall be as shown on the drawings with minor adjustments for brick/stone masonry.

All Holdfasts with concrete blocks shall be laid as the masonry work proceeds and shall not be fixed afterwards. The concrete blocks shall neither be measured separately nor any deduction made in brickwork for these blocks. Door frames when abutting R.C.C. member shall be fixed To R.C.C. members with raw plug 50mm long and wooden screws of required size. Screw heads shall be sunk into frames and plugged properly.

11.3 Chaukhat (Door/Window frames)



The frames for the doors and windows shall be made from approved seasoned salwood confirming to the quality as per clause 11.1. The workmanship for the frames should confirm to clause 11.2 including the provision of all the related fixtures and accessories. The frames shall be set out and fixed in place efficiently and securely. All fixtures and fastenings to be used shall be approved by the Employer. They shall be new, sound and strong. They shall be of the best quality and workmanship. The size, shape, design and finish shall be as directed by the Employer, according to the drawings and deposited in his office for reference. All fixtures shall be fixed to the jointing in a secured 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 ever effected, at the contractor's expenses.

11.4 Measurement

The measurement of the timber frame shall be taken in its net length and section and worked out correct up to three places of decimals in cubic metre. Total tolerance of 3mm. and 1.5 mm are admissible in sections of wrought timber and undressed timber respectively.

11.5 FULLY PANELED DOOR SHUTTER

Fully paneled door shutters for Nepal style carved doors, simple doors and windows with approved seasoned sal wood with good finishing including fixing with 3 nos. of 10 cm hinges per leaf, 2 no of 30 cm and 15cm chromium plates tower bolts, 1no chromium plate handle, one no. of locking set, 2 nos. of rubber stoppers etc. as per specifications and as per drawings all complete.

11.6 Materials

- (a) Timber as per clause 11.1 woodwork in door and window frames.
- (b) Fixtures and fastenings: Providing and fixing in position the following fixtures and fastenings per every leaf of door shutter:

Locking set of approved quality	1 Set
Hinges, 10cm long of 12 gauge with 38mm long N. F screws	3 Nos
Heavy duty aluminium tower bolt 15cm long with screws	2 Nos
Heavy duty aluminium handle 15 cm size with screws	1 Nos.
Rubber stopper fixed with shutter	2 Nos.

All fixtures and fastenings to be used shall be approved by the Employer. They shall be new, sound and strong. They shall be of the best quality and workmanship. The size, shape, design and finish shall be as directed by the Employer and deposited in his office for reference.

All fixtures shall be fixed to the jointing in a secured 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 ever effected, at the contractor's expenses.

When the type is not mentioned in the drawing or item, it shall be hung or swing as directed by the Employer. In case that the ventilators hung, two brass butt hinges shall be fixed with brass screws unless otherwise mentioned in the drawing. A pair of 23cm iron hooks and eyes shall be fixed to the ventilator frames and the shutter as directed. If the detailed drawing specifies different types of fixtures, the work shall be carried out according to the drawing. Screws shall be of the suitable length and correct diameter and fixed with screwdriver and not by the hammering.

11.7 Construction

The shutters shall be panelled as specified. The thickness of shutter shall be 3cm to 5cm or as specified or as per drawing. The style, rails and panels shall be planed, neatly and truly finished to the exact dimension as per drawing. The style and rails shall be framed properly and accurately with mortise and tendon- joint and fixed with wooden or bamboo pins or directed by the Site Engineer. Panels shall be of one piece without any joint and fixed with 12mm insertion into the rails and styles or as per drawing. Rails shall be provided with moulding as per design or as directed by the Site Engineer.

The thickness of the panels shall be 12mm to 25mm as specified or as directed by the Site Engineer. All rails over 15cm in width shall have double Tonen or as per drawing.

11.8 Measurement

The measurement of the shutter shall be taken in square meter for the finished work in closed position. Over lap of two shutters shall not measure. The rate shall be for complete work including purchasing and fixing in position. The rate shall include all the materials and labour all complete.



12.0 FULLY GLAZED SHUTTERS

Fully glazed shutters for doors and windows with approved sal wood using wooden beads or putty with good finishing, including fixing with 3 nos. chromium plated tower bolts of 30cm and 15 cm length, 2nos chromium plated handles, one nos. hooks or wooden cleat per leaf , required nose of screw etc as per drawings, all complete.

12.1 Materials

Timber: As per clause 11.1, woodwork in door and window frames.

(a) Fixtures and fastenings: Providing and fixing in position, the following fixtures and fastenings per every leaf of glazed shutter

- Hinges of 10cm length with screws 3 Nos.
- Heavy duty aluminium tower bolt 30 cm long 1 No.
- Heavy duty aluminium tower bolt 15cm long with screws 1 No.
- Heavy duty aluminium Pulling handle 15 cm long with screws 1No
- Wooden buffer stop with screws 2 Nos.
- Wooden cleat with screws and hinges 2 Nos.

All fixtures and fastenings shall be approved by the Site Engineer. They shall be new, sound and strong. They shall be of best quality and workmanship. The size, shape, design and finish shall be as directed by the Site Engineer, and deposited in his office for reference.

Glass: The glass shall be sheet glass and free from bubbles, scratches and other imperfections. The thickness of glass shall be fixed in 12mm to 15mmr, rebate of the wooden frame leaving 1.5 mm clear gap around for expansion .The rebate shall be painted as specified, before glasses are fixed. These glasses should be fixed with nickel screws in the rebate by moulded wooden fillets running all around, inserting a strip of felt or rubber in the rebate under the glass to act as a cushion. In case putty is provided, it should be of the best quality made of finely powdered whiting and linseed oil, kneaded in to a stiff paste. First a thin layer of putty (back putty) shall be applied on the rebate and the glass shall be fixed in position by few small nails. Then putty (front putty) shall be applied and pressed in position and finished neatly in such a manner that no putty projects beyond the rebate. The putty shall then be painted with a coat of specified paint.

12.2 Construction

All fixtures shall be fixed to the jointing in a secured 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 in the drawing or item, it shall be hung or swing, as directed by the Site Engineer. In case the ventilator is hung, 2 brass butt hinges shall be fixed with brass screws, unless otherwise mentioned on the drawings. A pair of 23cm iron hooks and eyes shall be fixed to the ventilator frames and the shutter as directed. If detail drawings specify different type of fixtures, the work shall be carried out according to the drawings. Screws shall be of suitable length and correct diameter and be fixed with screwdriver, and not by hammering

12.3 Measurement

Measurement of the shutter shall be taken in m². For the finished work in closed position, over lap of two shutters shall not be measured. The rate shall be of complete work, including hanging and fixing in position, and including all the materials and labour, all complete.

13.0 FLUSH DOOR SHUTTER

(a) Flush door shutters with approved ply wood fitted on approved seasoned sal wood frames including fixing with 3 nos. of 10cm hinges per leaf, 2 nos. of chromium plated tower bolts of 30 cm and 15cm length, one no of locking set, rubber stoppers and required nos. of screws etc as per drawing, all complete.

13.1 Materials

(a) Timber: As per Clause No 11.1 woodwork in door and window frames.

(b) Fixtures and Fastenings: Providing and fixing in position the following fixtures and fastenings in the door shutter per every leaf.

- Locking set of approved quality 1 No.
- Heavy duty aluminium 30 cm long tower bolt 1 No.



Handwritten signature in Nepali script.

- Heavy duty aluminium 15 cm long tower bolt, with screws 2 Nos.
- Rubber stopper fixed with shutters 2 Nos.

All fixtures and fastenings to be used shall be approved by the Site Engineer and fixed as specified. They shall be new, sound and strong. They shall be of the best quality and workmanship. The size, shape, design and finish shall be as directed by the Site Engineer and deposited in office for reference.

All fixtures shall be fixed to the joining in a secured and efficient manner. If any 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 in the drawing, or item, it shall be hung or swing as directed by the Site Engineer.

- (c) Ply wood: Ply wood shall be from approved manufacture of standard quality. It shall be bonded with synthetic resin of interior type unless otherwise stated. Where stated to be of exterior type, it shall be weather-proof. Samples of materials and their source of manufacture must be approved by the Site Engineer, before being used in the work.

13.2 Construction

The hollow core flush door shall be of single leaf or double leaves. The thickness of hollow core flush door including the thickness of ply wood shall be of 38 mm, the face panels to be of commercial ply wood glued on both sides. The seasoned sal wood framing shall comprise of horizontal rails 5nos. of 100mm x 30mm and verticals rails two nos. 100 mm x 30mm and middle vertical member 50mm x 30mm. In each segment, battens not less than 25mm wide shall be fixed, in such a way that the voids are equally distributed and the voids area in any segment is less than 300 cm² or as per drawing and as directed by the Site Engineer. The thickness referred to is for finished thickness and no tolerance is allowed.

All doors shall be provided with Indian rubber doorstops. Levelling of the surface shall be carried out during each stage of construction, i.e. fabrication of core and bonding of the ply wood. Thickness of the core shall be checked for uniformity before bonding of the ply wood. The thickness of ply wood on both sides shall be of 4mm. The ply wood shall be glued under pressure on both faces of the core. In case of double leaf shutters, the meeting of the stiles shall be either splayed or square type as per detail drawing. All four edges of the door shutters shall be square. The shutter shall be free from twist or warp in its plane. Both faces of door shutter shall be smooth and of even texture.

13.3 Measurement

The measurements of hollow core flush door shutter shall be taken in m² for finished work in close position. Overlaps of two shutters shall not be measured. The rate shall be for the complete work including all fixtures, hanging and fixing in position and inclusive of all materials and labours complete

- (a) Flush door shutters with 4mm commercial ply wood on one side and 2mm thick teak ply on other side fitted on approved seasoned sal wood frames, including fixing with 3nos. of 10 cm hinges per leaf, 2nos. of heavy duty aluminium tower bolts of 30cm and 15 cm length, one number of locking set, rubber stoppers, required nos. of screws etc. as per drawing, all complete.

Material: As per clause no.14.1 and water proof ply wood. Thickness of the water proof ply wood, teak or veneer ply wood shall not be less than 2mm.

Measurement: As per clause no 14-3

- (b) Flush door shutter with 4mm commercial ply wood on one side and 26 gauge Aluminium plain sheet on other side fitted on approved seasoned sal wood including fixing with 3 nose of 10cm hinges and 2 Nos of 15cm length tower bolts, one no of locking set, rubber stopper with required nos. of screws, nails etc as per drawing, all complete.

Material: As per clause no.14.1 and Aluminium plain sheet. Aluminium plain sheet shall be from approved manufacture and of standard quality. The panel shall be of one pieces without any joint and shall be fixed with Aluminium flat strip fixed all round with nickel screws. The size, shape and appearance of the aluminium flat strip shall be as directed by the Site Engineer.

Measurement: As per clause no 14-3

14.0 COLOURED ANODISED ALUMINIUM WINDOW SHUTTER

General : The aluminium work as schedule and detailed shall be fabricated as per the Drawing, Fabricated aluminium work covered by this specification shall supplied and installed by the well-known local aluminium fabricators as approved by engineer.

Before placing any order the Contractor shall state the name of windows manufacturer he has selected from list of approve manufacturer. The nominated manufacturer shall not be change without prior approval of the engineer.

Materials : Extruded aluminium components shall be manufactured from aluminium alloy B 6063-T5. It should be brown coloured anodised and Agrani Aluminium Nepal or Equivalent.

The lining to louver panels shall be 1.0 mm thick sheet aluminium anodised as specified. Hardware and fittings shall approved by Engineer.

Manufacturer : Aluminium work shall be fabricated in accordance with the prevalent practice among the local Manufacturer and per drawing showing jointing details, hardware and extrusion profiles.

It will be the aluminium fabricator responsibility to ensure that all fabricated aluminium work is carried out in accordance with the drawings.

Finished & Protection : Fabricated aluminium work shall be caustic etched, anodised and sealed as required by AS K 182 and finished with two coats of an approved lacquer.

All components shall be anodised 0.02 mm thick.

Workshop Drawings: The contractor shall arrange for the preparation of complete workshop drawings of ass fabricated aluminium work and shall submit same to the Engineer.

Fixing and Strength of Main Members: Main members shall be of such strength that a wind pressure of 1.16 kPa shall cause a deflection of not more that 1/240 of the span of the member. No permanent deflection shall result from such conditions of loading.

Fixing to member shall be such that the above loading shall be generated in the member without sufficient stress to cause failure or movement to ne evident at any joint.

The aluminium fabricator shall take full responsibility that all fabricated aluminium work shall comply with the above conditions.

Load bearing brackets shall be manufactured from 40 x 6 mm mild still bent to shape, hot dipped galvanized, bitumen coated only on surfaces coming in contact with aluminium and spaced at not more than 500MM centres.

Load bearing brackets shall be fabricated and fixed as shown in the drawings.

Expansion: Provision for vertical and horizontal expansion must be fully detailed on the aluminium fabrications workshop drawings.

Vertical and horizontal expansion joints shall be so designed as to cover ass weather conditions likely to be encountered on the site.

Flashing: All flashings required to be built in as the work proceeds shall be supplied by the Contractor and built in by the trade concerned.

All other flashings as detailed in the Drawings shall be supplied and foxed in position by the aluminium fabricator.

Weather seals: Approved pile weather seals shall be metal backed, siliconised, of the size called for in the relevant Public Works Department Drawings.

Measurement: it shall be dine in square meter or the area done. Tate shall be for all labours and materials for all the work including.

15.0 **GLASS AT DOORS AND WINDOWS**

Fixed glazing for doors, windows and ventilators with 4mm, 5mm and 6mm glass, including wooden beads or putty, nails etc as per drawing, all complete.

15.1 **Materials**

Timber, Glass etc. same as above.

15.2 **Construction**

The glass shall be fitted in the frame, which is fixed. The glass panel shall be fixed in 15mm rebate, in the wooden frame, leaving 1.5mm clear gap around for expansion. The rebate shall be painted before glasses are fixed. The putty should be of the best quality, made of finely powdered whiting and linseed oil, kneaded into a stiff paste. First, thin layer of putty (back putty) shall be applied on the rebate and glass shall be fixed in position by a few small nails. Then putty (front putty) shall be applied and pressed in position and finished of neatly in such a manner that no putty projects beyond the rebate. The putty shall then be painted with an approved paint. In case wooden fillets are provided, the wooden fillets should be fixed in the rebate by moulded wooden fillets around and fixed with nickel screws, inserting a strip of felt or rubber in the rebate under the glass to act as a cushion. The wooden fillets shall be finished with approved painting.

15.3 Measurement

Measurement shall be taken in square meter of fixed glazing, including putty or wooden beads, materials, labour etc. all complete.

SPECIFICATION FOR PAINTING WORKS

16.0 Exterior & Interior Emulsion Paint :

A. General :

Extent and Intent

The Contactor shall supply all materials, labour, tools, ladders, scaffolding and other equipment necessary for the completion and protection of all painting work.

Painting, as herein specified shall be applied to all surfaces requiring painting throughout the interior and exterior of the buildings as given in the schedule of finishes or elsewhere. The painting shall be carried out by a specified sub-contractor, approved by the engineer. Care is to be taken that all surface to be painted are thoroughly clean and dry

The Paint shall be of best quality (Asian Paint, APEX Interior Emulsion or equivalent) and the colour shall be match to the existing colour. The paint shall be mixed and prepared as laid down in the instruction manual of the manufacture. General methodology for preparing the emulsion paint shall be as described here.

B. Mixing :

The container of the Exterior Emulsion paint shall be loose by rolling and shaking the container before opening. Firstly after opening the container, Apply two coats of finish paint by thinning 1 liter of paint with 400 ml water (add 8 liters of water to 20 liters drum of Apex).

16.1 Materials

All painting materials shall be only ready mixed type in sealed tins of approved marks. Water proof cement paints shall be obtained from approved brand manufacturers as specified.

All painting materials required for the work shall be delivered to the site in their containers with seal, etc. unbroken and are to be clearly marked with manufacturer's name and trade marks and a description of contents and colour.

Paints shall be mixed and applied strictly in accordance with the manufacturer's instructions and with the approval of the Engineer. All materials shall be stored at site of work. All paints shall be applied by means of brush.

The only addition, which will be allowed to be made locally, will be liquid thinner supplied or recommended according to manufacturer's instructions and none shall be thinned more than as approved by the Engineer.

16.2 Application :

Firstly the surface of wall or ceiling shall be cleaned to remove loose dust or dirt and old paint by use of soda water. The surface shall then be wetted by sprinkling water, which shall be allowed to run off. By using quality board brush the freshly mixed exterior emulsion paint shall be then be applied first horizontally and immediately crossed vertically. Brushing shall not be continued too long to avoid brush marks. The first shall be well brushed into the surface to form bond. Plastic Emulsion paint shall be used within an hour of mixing and shall be kept stirred during application. At the end of the day of each application of Emulsion paint the surface shall be wetted with fine water spray for curing.



Handwritten signature in Nepali script

After a day or two a second coat of cement paint of similar preparation shall be applied on the wetted surface and the second coat shall be applied carefully to give a uniform and good finished appearance. The number of coat shall be two or more coat. After each days work the brush shall be washed and kept dry. Cement paint shall be applied during dry weather but not during too hot or wet weather.

Areas of Application	R.C.C., Masonry, Asbestos
Consistency Offered	Smooth and free-flowing
Thinner	Municipal or potable water
Thinner Ratio	Paint : Water = 100 : 40 by volume for each coat
Method of Application	Brush, roller or spray
Spreading Capacity (for Exterior on normal Cement Plastered Surface)	5.5-6.0 sq m per liter in two coats
Drying Time (@28 - 30° C & 30 ± 5% R.H)	Dry to touch - ½ hour
Re-coating Period	Minimum 4 hours (Temp. 30° C, Relative humidity - 60 - 65 %)
Finish	Smooth and matt

16.3 Scaffolding:

Necessary and suitable scaffolding shall be provided to facilitate the painting works. Scaffolding shall be sound and strong and supports and members sufficiently strong so as to withstand all load likely to come upon them.

16.4 Painting Brushes: -

The brushes should be of bristles and not horsehair. Bristles can be distinguished by the fact each bristle is split at ends. A good brush should have springiness in the bristles.

The following sizes of brushes are generally used :

- (1) For dusting large flat surface, sizes 12 or 14
- (2) For fine work, sizes 2 and 4

A round brush is considered the best for painting.

New brushes should be placed in water for 2 to 3 hours, and then allowed to dry for one hour before used. When a brush is to be used for another color or is no longer required, it should be cleaned at once by dipping into kerosene (conversing the bristles only) when not in use.

16.5 Measurement :

For measurement of painting on different works. It shall be measured in sq.m. Stating the number of coats applied on the surface. Flat measurement shall be taken.

17.0 ENAMEL PAINTS ON WOODEN SURFACE

Painting in wooden surface with enamel (readymade) paint of approved colour in two or more coats over one coat of primer in properly sanded surface for high class finish, all complete.

17.1 Materials

Primer and paints shall be of approved quality and approved manufacturer's as specified. These materials shall be ready mixed and sealed tins with required quantity stocked at site.

17.2 Preparation of the Surface

All surfaces shall be thoroughly planed and sand papered. In case of surface having knots and nail holes, they should be filled with stopping and knotting materials. The knotting materials shall consist of pure shellac dissolved in methylated sprits. For stopping, Russian oil or putty shall be used.

The Putty shall consist of two parts of whiting (powdered chalk), one parts of white lead mixed together in doubled boiled linseed oil and well kneaded. The surface thus treated shall be allowed to dry up and then sand papered. Otherwise, a ready-made approved putty may be used.



17.3 Application

After preparing the surface, the priming coat shall be applied with hair- brushes. Thereafter a top- coat shall be applied. Another coat shall be applied after the previous coat is dry. Care should be taken that dust or foreign materials do not settle or otherwise disfigure the various coats.

In following the above procedure, the materials to be used will depend upon the type of paints specified and only such materials as are consistent with a particular type and brand shall be used. The same brand of materials will be used for various coats. All paints shall be used and applied as per manufacturer’s instruction (specification). The paints shall be applied with bristle brushes and not horse hair ones. The paints shall be applied in the thinnest possible layers with parallel drawings, no flowing down shall be allowed. Painting to false ceiling and acoustic materials such as thermos-cool, perforated acoustic tile, soft board etc shall be done by spray painting only.

17.4 Measurement

The work shall be measured in sq.m. of the finished area and shall be in accordance with IS: 1200-1964. If not included in the item, the measurement shall be as follows:

SN.	Description of Work	Measurement method	Coefficient Factor
i	Panelled or Frame	Measured flat (not girlhood) End of frame to frame	1.125 for each side
ii	Ledge & batten	Do.	1.125 for each side
iii	Flush	Do.	1 for each side
iv	Fully glazed or louvered.	Do.	0.5 for each side
v	Part panelled or glazed or gauged.	Do.	1 for each side.
vi	Collapsible Gate	Do	1.5 for painting all over
vii	Metal grill work, balustrade railing	Do	1 for painting all over

Rate shall include all materials, primers and 2 coats of paints, necessary scaffolding, labour all complete.

18.0 Dismantling works

Dismantling works of masonry structures (stone, brick, PCC and RCC) of all kinds according to drawings and sizes including lead up to 50 m and surface preparation for further works as directed by the Site Engineer.

18.1 Dismantling

The dismantling shall be done as per the dimensions shown on the drawings and to the extent of the work required as per the opinion of the Site Engineer.

The dismantling shall be carefully done out to the shapes and dimensions as shown or figured on the drawings or as directed by the Site Engineer. Should any of the dismantling be done in access of the specified dimensions, the Contractor shall build back such works at his own expense with the materials as specified by the Site Engineer in position until it is brought back to the proper dimensions. No extra charge will be given for the lead of the excavated materials up to 50m.

18.2 Disposal

Disposal of the surplus dismantled materials/spoil shall be done within the area as directed by the Site Engineer. Nothing extra shall be paid for such disposal within the lead of 50 m.

18.3 Measurement



Measurement shall be in cubic metre according to the drawing or the Site Engineer's instructions.

Specifications for Sanitary and Plumbing Works and Miscellaneous accessories

19.0 General

- 19.1 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 expense and his own responsibility all the purpose of making the quotation and for entering into a contract keeping in view the specifications detailed hereunder.
- 19.2 The bid rates shall include for the cost of material, 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.

20.0 Scope of work

The scope of work under this contract shall cover providing and installing sanitary works and fixtures complete set with all necessary fitting, internal and external for fixing at positions of the building including cutting and making good the damages groove to its original finish and ready for operation after testing.

21.0 Description of work



The description of work includes the following.

- a) Supply and installation of Geyser
- b) Supply and installation of Flushing cistern.
- c) Supply and installation of Orissa Pan.
- d) Supply and installation of Wash Basin.
- e) Supply and installation of Kitchen Sink with tray.
- f) Supply and installation of Basin Mirror.
- g) Supply and installation of water supply GI pipe.
- h) Supply and installation of Telephonic Mixture cock with shower, and half turn taps.
- i) Supply and installation of miscellaneous fixtures including commode cover, bib cock, stop cocks, angle cocks, flexible pipe, bottle trap, pillar cock, heavy spindle and union.
- j) Repair and Maintenance of choked soil pipes.
- k) Repair and Maintenance of existing water supply pipes.
- l) Other miscellaneous minor repairs and maintenance.

22.0 Selection and Installation of Sanitary appliances:

Selection, installation and maintenance of sanitary appliances shall be done in accordance with good practice.

All sanitary appliances and fittings shall be carefully examined for defects before they are installed and also in the completion of work. The contractor shall give notice to the employer from time to time prior to installation and execution of work at least 3 days before fitting after getting approval for the make of appliances.

The rate for all such work shall be good for all works described in the Bill of Quantity, description, specification, drawing and direction to execute and to complete in all respect, in position, level dimension, with all necessary fixtures, clamps, connections etc. including cutting, bending, grooving, installation and re-installation of civil works as per specification with materials.

22.1 Sanitary works and Fixtures:

The work shall cover providing and installing sanitary works and fixtures complete set with all necessary fitting, internal and external for fixing at positions of the building including cutting and making good the damages groove to its original finish and ready for operation after testing.

22.2 Materials:

All sanitary fittings shall be of Commercial Parryware, Hindustan Neycer, American Standard or similar confirming to IS or BS standards as approved by the employer. Similarly, all the other fixtures and related accessories should also be of good quality, strong, new and confirming to IS or BS standards. Alternatively a schedule of other manufactured fittings may be submitted for approval of the Consultants and these shall be indicated in detail along with the tender.

22.3 Fittings:

22.3.1 Asian W.C.

The W.C. shall be of white vitreous Orrissa pattern (18*20") with 100mm dia H.C.C. syphon with vent arm S trap with ISI mark nit. The Orrissa pattern pan shall be fitted with C. P. flush valve of standard make.

The urinals shall be of white vitreous flat back type urinals with chrome plated spreader pipes and necessary C.P. fittings with wall hangers, white vitreous division wall hanger and screws, vitreous automatic flushing cistern of suitable capacity for number of urinal.

22.3.2 Flushing cistern

The flushing cistern shall be made of plastic or vitreous, white in colour of standard make Hindware, Kajaria or equivalent confirming to ISI standards. The flushing cistern shall be fitted with C. P. connection bend pipe of standard make.

The flushing cistern shall be of 12.5 litres capacity or above complete with flexible pipes for connection to water supply, C.P. fittings with wall hangers, and screws. The flushing handle shall be soft touch turn flushing type.

22.3.3 Geyser (NA)



Handwritten signature in Nepali script.

The geyser shall be of 25 litres capacity complete with fixtures including screws and flexible pipe. The geyser shall confirm to IS standards, Usha or equivalent.

22.3.4 Wash basin:

The wash basin shall be of white vitreous lavatory basin of size 560mm x 456mm with one or double tap as per direction, 32mm chrome plate waste pipe 1 meter chain stay and plug, pair of C.P. built in brackets, 32mm C.P. bottle trap, 'S' or 'P' trap, 12mm lead connecting .5m long with both end coupling joint.

22.3.5 Water Supply pipe

The water supply pipe shall be of Galvanized iron and shall be of standard make confirming to IS or NS standards. The fixtures shall be of similar quality and it shall be part of the supply line.

22.3.6 Bib cock

All bib cocks (long body, short body), including pillar cock shall be of good quality of reputed make and shall be chrome plated.

22.3.7 Kitchen Sink

Sink for kitchen shall be of 60 x 45 x 22 cm with drain board; stainless steel with 12mm C.P. bibcock, 45cm long lead connector, 32mm C.P. waste line shall be provided with 1m long lead waste pipe.

22.3.8 Mixture Cock with shower

The mixture cock and shower should be C.P., of good quality confirming to IS and mounted as per direction of the site engineer. The shower shall be telephonic.

22.3.9 Soap Disc

The soap disc shall be of white glazed porcelain or C.P. wall mounted as per direction.

22.3.10 Glass shelf

The glass self shall be specified size with C.P. guard rail and bracket with C.P. Screws glass shall be 6mm thick with edge round off.

22.3.11 Towel rail

Towel rail shall be one arm, two or multiple arm fixed on fixed on wall it shall be C.P of reputed make

22.3.12 Wall Mirror

The mirror shall be of at least 6 mm thick silver backed best quality as approved by the Site Engineer. The mirror shall be with backlight frame.

The fixing and fitting of the sanitary wares and fixtures to the plate shall be in accordance with the good practice. The material used shall be as specified ISI or BS standard or as directed by the Employer.

The rate also include painting, chase cutting, and making good the damage with required materials up to the civil work specification.

The rate shall be inclusive of bib cocks, stop-cocks, accessories needed for fixing fitting and to run the fixtures in good condition as directed and approved.

The miscellaneous sanitary fittings and accessories shall confirm to the IS or BS standards or of the highest quality available with due approval from the Site Engineer.

Electrical Specifications

SCOPE OF WORK

23.0 Electrical Installation

23.1 GENERAL:

The following specifications will apply under all circumstance to the equipment 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 expense and his own responsibility all the purpose of making the tender and for entering into a contract keeping in view the specifications detailed here under, drawings and design of the electrical installation and inspection of site etc.

23.2 Scope of work

The scope of work under this contract shall under due consideration of the requirements as stipulated in the specification include;



Supply, delivery and installation of complete electrification in G2, D2 blocks as per the instruction by site engineer at site.

- a) Supply and wiring of Light and Power points with PVC insulated copper conductor cables and PVC listics in wall, ceiling and floors as per drawings.
- c) Where the electrical work is associated with the work of the others, the contractors shall confirm 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 specification and with the high standards of trade practices based on I.S. code of practice.
- d) 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, and beams and in the false ceiling.

23.2 Description of work

The description of work includes the following.

- Supply and installation of panel board,
- Lighting fixtures, power sockets, switches, earthing board, MCBs, Bells and other electrical fixtures as per specifications.
- Testing and commissioning.

GENERAL SPECIFICATIONS FOR ELECTRICAL WORKS

24.0 General Requirement:

- 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 Engineer or Engineer's Representatives.
- 1.3 All electrical fittings and wiring accessories shall be installed in accordance with IS.
- 1.4 The system should provide ease to fittings for maintenance and repair and for any possible modification to the system. Installation shall be safe, simple, systematic order so that a general electrician can be easily solve the problems arises during the maintenance of the system.
- 1.5 There shall be two distinct circuits, one for lights and fans and the other for power appliances.
- 1.6 Prior to the installation of the lighting, fans and plug points and distribution boards, switches etc. the contractor shall ascertain final positions with the Engineer or Engineer's Representatives.

2. Isolation and Protection:

- 2.1 Protective device used in the installation should be capable of interrupting any short circuit current that may without danger.
- 2.2 The switches shall be connected to the lives only and never on the neutral.
- 2.3 An earthing conductor with insulate covering shall be installed along with power circuit conductors and earthing with bare copper conductor in PVC duct or HDP pipe shall be installed to the main panel board, distribution board and sub distribution board 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, fans and 5A sockets outlets whichever applicable as per drawing. The load on each sub circuit shall be restricted to 800 Watts.

4. Switches:



- 4.1 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 one switch where as fan 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.

5. Materials:

- 5.1 The contractor has to approve the drawing if applicable and the samples of all the materials and equipment to be supplied and installed under this contract. Non approval given by the Engineer or Engineer's Representatives 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.
- 5.2 All materials and equipment shall be new and shall be in accordance with the standard as established by the Indian Standard Institute. Where material or equipment are specified or shown on the drawings by name of the manufactures, they shall be used. Equipment or material of other manufactures may be considered for use if of equal quality appearance and electrical and mechanical characteristics and approved by the Engineer or Engineer's Representatives. If the contractor wishes to use any other materials or equipment, he must obtain permission of the Engineer or Engineer's Representatives in writing.
- 5.3 Any material supplied by the owner, if damaged in any way during the execution of work or otherwise, shall be replaced by the contractor at his own cost.

6. Installation:

- 6.1 Installation of all lighting shall be done by experienced electricians and supervised by electrical engineer. Lighting fixtures shall not be installed until wall and ceiling finishing work is completed.
- 6.2 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 Engineer or Engineer's Representatives. Where the fixtures does not itself provide a suitable cover for the fixture outlet box, suitable cover plate on canopy shall be provided.

7. Quality of Work:

- 7.1 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.
- 7.2 Workmanship and good appearance of the installation shall be of equal, and all portions of the work shall be so laid out and installed that the work as a whole is of uniform quality and shall present a neat appearance in a manner meeting the approval of the Engineer or Engineer's Representatives.
- 7.3 The contractor shall verify in the field all measurements necessary for the electrical work and shall assume responsibility for their accuracy.

8. Progress and Completion of Works:

- 8.1 The work shall be commenced immediately after the contractor receives instructions to proceed.
- 8.2 The contractor shall employ adequate labours to complete the work within the schedule time and shall make his own arrangement for housing labour 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 Engineer or Engineer's Representatives.
- 8.3 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 the Indian codes and as specified herein or shown on the drawings. The progress of the electrical work shall be carried out so as to conform to the progress of the work of the other trade and the entire installation shall be completed as soon as the condition of the building will permit.
- 8.4 Upon completion of the installation of the lighting fixtures and lighting equipment they must be in first class operations order and in perfect conditions as to finish, etc. 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.

9. Performance of Work:

- 9.1 All cutting, drilling, channelling, patching, etc. required for installation of electrical work shall be carried out in a manner approved by the Engineer or Engineer's Representatives. Any defacing 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 owner and to be satisfaction of the Engineer or Engineer's Representatives.

10 Inspection, Testing & Commissioning:

10. The contractor shall notify in writing to the Engineer or Engineer's Representatives about the completion of the work. Within thirty days from the date of this notification, the Engineer or Engineer's Representatives shall send his representative to remain present at the time of carrying out the tests by the contractors. The contractor shall fix up this date in consultation with the Engineer or Engineer's Representatives for such test.
10. The contractor shall be responsible for providing the necessary instruments and the subsidiary earths for carrying out the tests without any extra charge.

11 Maintenance and Guarantee:

11. 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 owner, within a reasonable time.

In the event of default on this guarantee by the contractor, the owner may have works done as required and charge the cost to the contractors.

TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORKS

25 Laying of Cables

- 1.1 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 mainted as per BS or IS specification.
- 1.2 Where cables are laying directly in the ground cable trenches of sufficient width 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 Hum pipe shall be used to protect cable.
- 1.3 If two or more cable 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 damage or unnecessary strain in cable .In case of installing the cable in PVC duct and HDP excessive bends should be avoided.

2 Lights and Fan Points

- 2.1 Concealed wiring to light and fan points shall be run inside the walls, ceiling and floors in a concealed ¾"dia.or higher sizes HDP pipe with 3/22 SWG PVC insulated, 600 V grade, single core, stranded 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.
- 2.2 5 A control switches shall be incorporated in the general lighting circuits as indicated in the drawings.
- 2.3 The lights and fan points includes the materials required for the connection of fixtures, ceiling fan & exhaust fan to the metal junction boxes and switches as shown on the drawings. PVC insulated copper

wire shall be manufactured by the company having NS (Nepal standard) certificate only.

3 Power Points

- 3.1 Concealed wiring to power socket outlets shall be by means of 2x7/22 SWG +1x3/22 SWG (for general power points) and 2x7/20 SWG +1x3/20 SWG (for dedicated power point) PVC insulated 600 V grade, single core, stranded copper conductor cables in a concealed ¾" dia. or higher sizes 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 Engineer or Engineer's Representatives.
- 3.2 The power points include the materials required for the connection of socket outlets from the MCB's installed on the sub-distribution boards as shown on the drawings. PVC insulated copper wire shall be by the company having NS (Nepal standard) certificate only.

4 Supply Connection to Lights and Fan Points

- 4.1 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 from of 2x3/20 SWG, PVC insulated 600 V grade single core, stranded copper conductor cables in a concealed ¾" dia. HDP pipe in floors, slab or brickwork as shown on the drawings and shall conform to the relevant Indian or British standards.
- 4.2 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 running meters approved by the Engineer or Engineer's Representatives. PVC insulated copper wire shall be manufactured by the company having NS (Nepal standard) certificate only.

5 Metal Junction Boxes

- 5.1 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 Engineer or Engineer's Representatives.
- 5.2 The conductor 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 cable. The junction boxes shall be covered with GI sheet of appropriate size and fixed tightly.

6 Single Pole Switches

- 6.1 All switches shall be single pole one way or two way as required & of wall mounted 230 V, 5 A suitable for recessed mounted and flush finish on wall with 18 SWG thick GI sheet metal box and shall be installed at height up to 1.5 m. above the finished floor level.
- 6.2 This includes the connection of light & fan points as shown on the drawings and there shall be two or three lights controlled by one switch where as ceiling fan shall be controlled by both switch and separate electronic solid fan regulator fixed in GI sheet metal box.
- 6.3 The type of switches shall be CPL/Anchor Dyna type or equivalent as approved by the Engineer or Engineer's Representatives.

7. Power Sockets

- 7.1 The entire power outlet shall be 230 V, 50 Hz 5/15A, 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 & screws and shall be installed 20 cm. above the finished floor level.
- 7.2 The type of power outlets shall be CPL/Anchor Dyna type or equivalent as approved by the Engineer or Engineer's Representatives.
- 7.3 The power outlets shall be switched and earthed with 1*3/20 SWG or 1x3/22 SWG PVC insulated stranded copper wire for dedicated and general power points respectively.

8. Wall Mounted Fixtures

0



- 8.1 General type wall mounted fixtures shall be 250V; 50 Hz fixtures shall be wall bracket type including brass holder and 100 W GLS bulb as specified in the price schedule and bill of quantity and shall be installed 2.3 m. above the finished floor level. Before installation the contractor has to approve the samples by the Engineer or Engineer's Representatives.
- 8.2 Decorative type compact fluorescent (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.

9 Ceiling Mounted Fixtures

- 9.1 Decorative type compact fluorescent (CFL) luminaries shall be made of CRCA sheet steel (powder coated) housing, finished in white inside and outside fitted with high purity anodized aluminium 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.
- 9.2 Ceiling mounted dome fixture shall be 250 V, 50 Hz, milky and frosted 200 mm. dia. round dome fixture including metallic holder with ceramic insulator, base frame, and 60 W GLS bulb as specified in the price schedule and bill of the samples by the Engineer or Engineer's Representatives.

10 Plastic Listy

10. The plastic listy for the wiring purpose shall be of good quality, strong and durable. Before installation the contractor has to approve the samples by the Engineer or Engineer's Representatives. The size of the listics used shall vary according to purpose at the discretion of the site engineer.

11 Fluorescent Tube Lamp Luminaries

11. Fluorescent tube lamp luminaries shall be of good quality. Before installation the contractor has to approve the samples by the Engineer or Engineer's Representatives. If the mentioned brand is ISO 9001 or 9002 certified than alternative brand also must be ISO 9001 or 9002 certified.
11. Mirror optic recessed mounting type luminaries shall be fitted with two 36 W trulite type tube light. It shall be comprising of white powder coated CRCA sheet steel housing, copper wound polyester filled ballast, starters etc complete with accessories and high purity anodized finished in white inside and outside fitted with high purity anodized aluminium mirror reflector assembly with cross louvers It shall be BJLM 236 Bajaj type or equivalent.
11. Decorative 4x18 W luminaries shall be comprising of white powder coated CRCA sheet steel housing complete with accessories such as copper wound polyester filled ballast, starters, 4x18 W trulite tube light and other accessories. It shall be covered with spring loaded prismatic polystyrene louver assembly. It shall be BJSL418 Bajaj or TBS 74/418 Phillips or equivalent.
11. Industrial type luminaries shall comprise of 2x36 W tube light, copper wound polyester filled ballast, starters etc. it shall have a mounting channel and covers made from CRCA sheet steel, stove enamelled. Vitreous enamelled reflector, which can be installed and removed without aid of any tools. It shall be TKC 24/236 Phillips type or equivalent.
11. Decorative 1x18 W wall mounted tube light luminaries shall consist of CRCA sheet steel stove enamelled white inside & outside, copper wound polyester filled ballast, starters, 1x18 W tube light and other accessories. A guiding stud and two no of end caps shall be provided. It shall be used as a mirror light.
11. All luminaries used shall be of the make Philips, Bajaj, Wipro, Osram or equivalent

26.0 Materials from Cut and Borrow:

Use of cut Material: All suitable and approved materials excavated from project area shall, in so far as practicable be used for construction of fill.

Used of Material from borrow: Where sufficient quantities of suitable cut material are not available, additional material shall be collected from borrow/quarry, where the material is suitable, with the approval of Engineer. Provided the need for such action has been determined before the work starts on any particular cut.

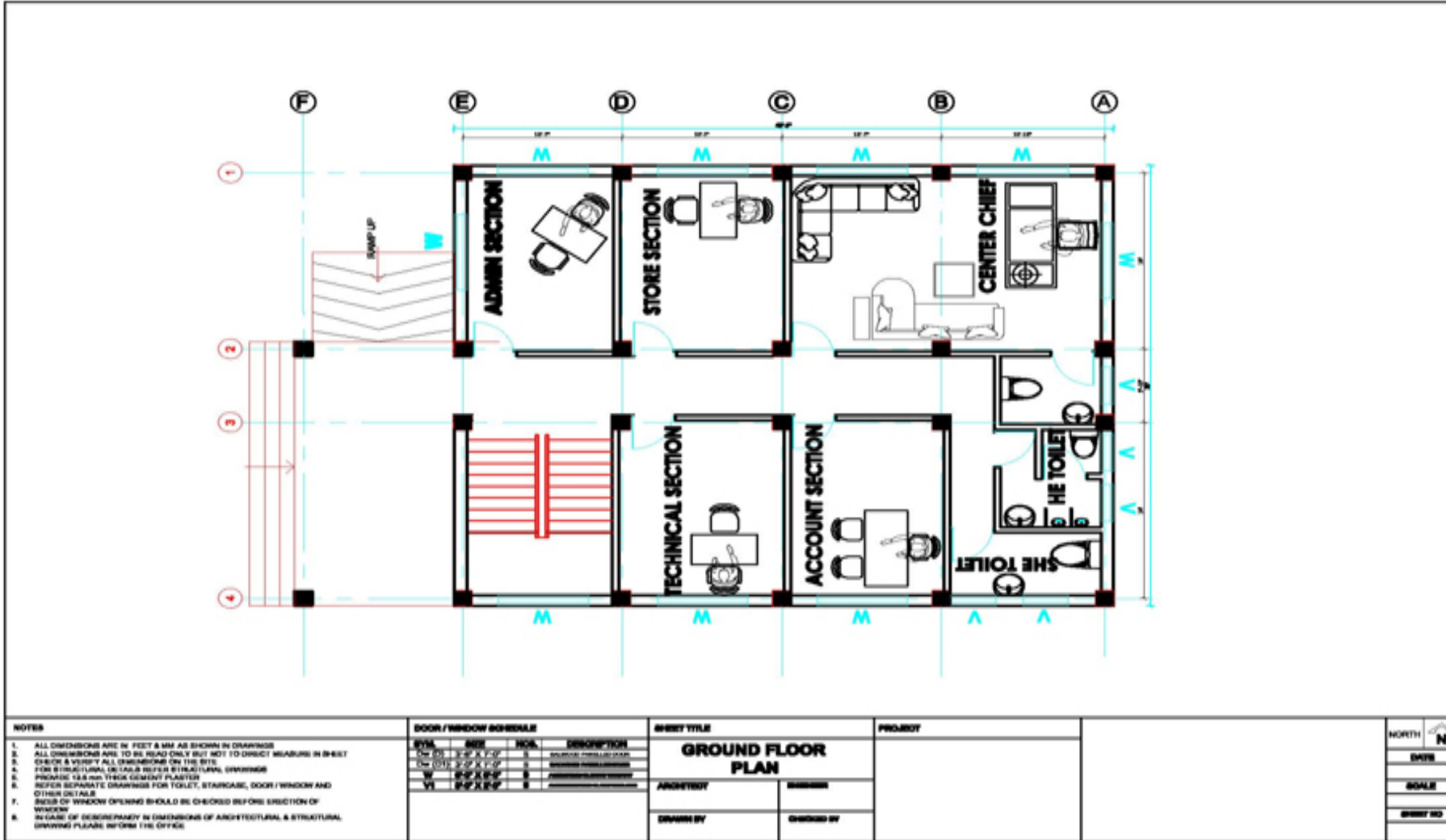
Material Selection: Particular materials in borrow/quarry site or in cuts may be selected for a specific purpose. Where section is required the method of excavations and the programme of work shall be arranged to avoid double handling. If selected materials are contaminated, the shortfall shall be replaced with material of at least equality, excavated and transported from alternative borrow/quarry site at no extra cost of the Employer.

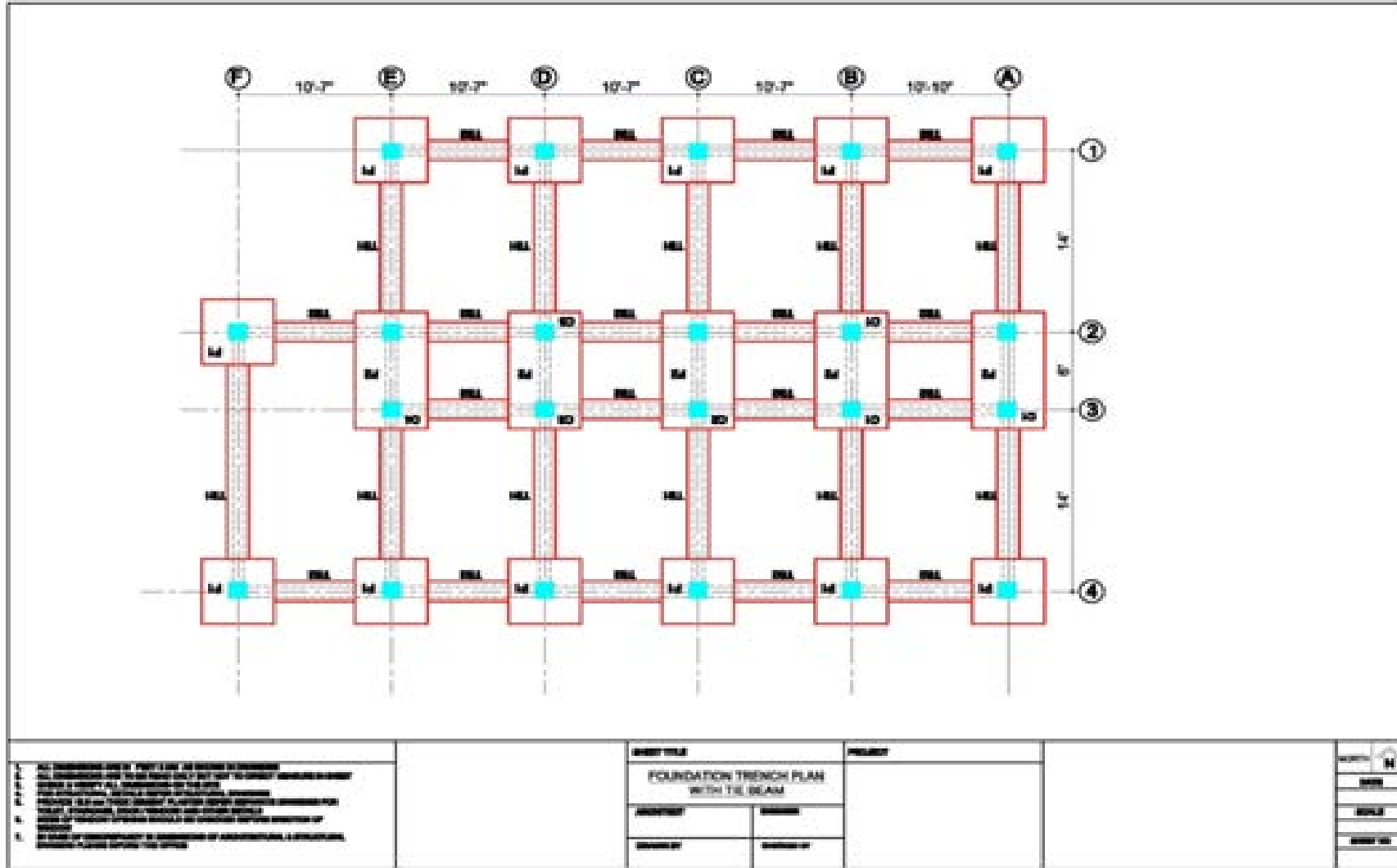
In general, the excavated materials shall be placed directly in their final position on fill.

The better class fill material shall be selected for use in the top layer if fills and in the lower layer of high fills and in the lower layer of high fills.

Section VIII. Drawings

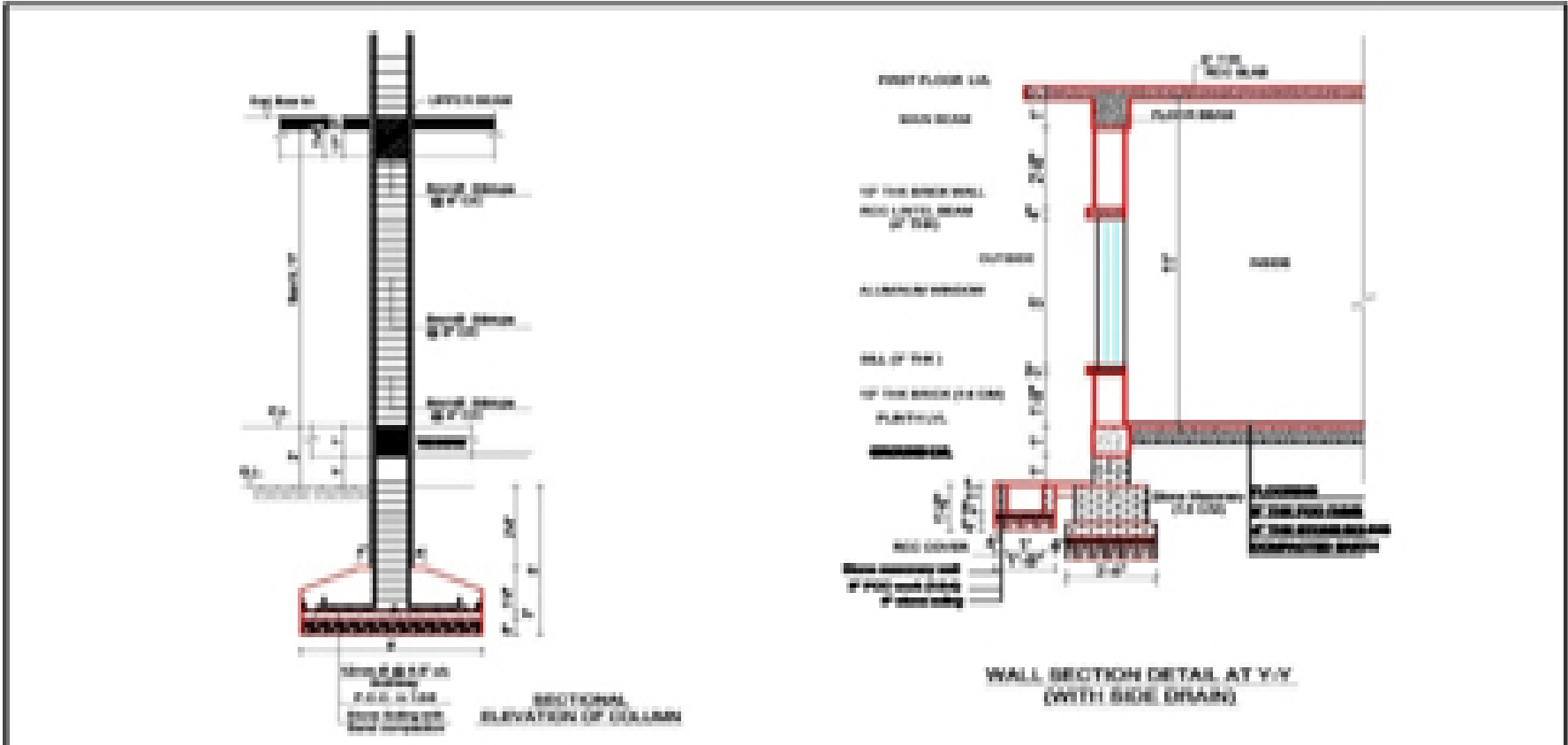






102 *Handwritten signature*





<p>REVISIONS</p> <p>1. [REVISION]</p> <p>2. [REVISION]</p> <p>3. [REVISION]</p>	<p>APPROVED BY</p> <p>[Signature]</p>	<p>FOR OWNER & WALL, SECTIONAL DETAIL</p>		<p>DATE</p>	<p>SCALE</p>
		<p>DESIGNED BY</p>	<p>CHECKED BY</p>		



Section IX. Bill of Quantities



Nepal Electricity Authority
(Government Of Nepal Undertaking)
Distribution and Consumers Services Directorate
Biratnagar Regional Office
Taplejung Distribution Center, Taplejung

"BILL OF QUANTITY"

JOB : Office Building Construction Works

Fiscal Year = 2074/2075

LOCATION : Taplejung DCs, Taplejung

S.N	Description of Works	Unit	Quantity	Rate		T.Amount	Remarks
				In Numbers	In Words		
A	Earthwork	-	-	-	-	-	
1	Earth work in excavation in trenches, foundations etc. in soft soil including timbering and shoring if necessary, dressing of sides, lift upto 1.5 mtr including stacking of excavated material at least 5 m mtr. Clear & backfilling with excavated material all complete.	m3	336.89				
B	Soling Work	-	-	-	-	-	
1	Dry stone soling work in floor foundation finishing as per drawing or instruction of engineer.	m3	51.81				
C	Cement Concrete Work	-	-	-	-	-	
1	Plane cement concrete in 1:3:6 ratio (M10/40) under wall, floor & column foundation etc. including protection of sides, laying compacting, curing with all complete as per instruction of site engineer	m3	27.56				
2	Structural concrete in any form,size shape and level for all R.C.C. works including columns, beams, lintels with cement, sand and crushed aggregate in 1:1.5:3 ratio (M20/20) including Mixing, laying, compacting, finishing and curing all complete	m3	78.72				



S.N	Description of Works	Unit	Quantity	Rate		T.Amount	Remarks
				In Numbers	In Words		
D	Form Work	-	-	-	-	-	
1	Formwork & Centering and shuttering with approved materials such as wooden/Plywood shuttering for all R.C.C.works of such as wooden shuttering 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 etc. all complete as per direction of Engineer.	m2	572.90				
E	Reinforcement Work	-	-	-	-	-	
1	Straightening, cleaning, cutting and bending of tore steel reinforcement bar of different diameter for R.C.C: work including fixing in position all complete as per the site in chargedrawing, specification and instruction of Engineer	kg	10813.97				
F	Stonemasonry Work	-	-	-	-	-	
1	Stone Masonrywork (Random Rubble Masonry) work in 1:6 cement mortar as per specification, drawing and instruction of Engineer	m3	168.86				
F	Brickmasonry Work	-	-	-	-	-	
1	Brick masonry work in (1:4) cement sand mortar with approved quality first class chimney made bricks in perfect line and level including wetting the bricks,packing the joints and curing with necessary scaffolding work, including supplying of all materials, labour, lead and lift, Work all complete as per the drawing, specification and instruction of site incharge	m3	42.60				
G	Doors & Windows	-	-	-	-	-	
1	Providing and fixing Sal wood chaukhat for door and window with good finish of approved salwood with necessary M.S. hold fasts including enamel paints all complete as per drawing , specification and instruction of Engineer.	m3	0.42				

S.N	Description of Works	Unit	Quantity	Rate		T.Amount	Remarks
				In Numbers	In Words		
2	Providing and Fixing 38mm thick flush door shutter in sal wood frame with 3 mm commercial ply wood on both side including enamel paint with accessories as per drawing, specification and instruction of Engineer	m2	21.09				
3	Supplying and fitting brown colour anodized Aluminium windows including 101x45x1.5mm section frame with shutters, 5mm tinted glass and necessary accessories as per drawings, specification and instruction of engineer, all complete.	m2	27.82				
4	Providing and fixing iron grill (3x20)mm 15kg/sqm including alluminium paints all complete as per drawing, specification and instruction of Engineer.	m2	27.82				
H	Floor Finishing Works	-	-	-	-	-	
1	Earth filling work for flooring with proper compaction all complete as per direction of Engineer	m3	97.53				
2	Sand filling work for flooring with proper compaction all complete as per direction of Engineer	m3	32.51				
3	500 gauge plastic sheet supplying and laying work all complete as per direction of Engineer	m2	130.04				
4	75 mm thick Plain cement concrete with cement, sand and crushed aggregate in 1:2:4 ratio including Mixing, laying, finishing and curing all complete.	m2	130.04				
5	3 mm thick cement sand punning on floor, skirting, dado etc, including mixing laying and rubbing with steel trowel to a hard, smooth and shining surface and curing all complete.	m2	226.04				
I	Plastering Works	-	-	-	-	-	
1	12.5mm thick cement plastering work for ceiling in 1:4 cement mortar of good finish including cleaning and wetting the surface and curing the work all complete	m2	184.84				

S.N	Description of Works	Unit	Quantity	Rate		T.Amount	Remarks
				In Numbers	In Words		
2	12.5mm thick cement plastering work for wall in 1:6 cement mortar of good finish including cleaning and wetting the surface and curing the work all complete	m2	713.74				
J	Painting Works	-	-	-	-	-	
1	Providing and application of two coat of Exterior weather coat paint over one coat of primer as per specification, drawing and instruction of Engineer	m2	192.07				
2	Providing and application of two coat of Plastic emulsion paint over one coat of primer as per specification, drawing and instruction of Engineer	m2	625.33				
K	Tiling Works	-	-	-	-	-	
1	Supplying and fixing of approved quality Porcelain glazed/ Non-glazed tile on floor surfaces in cement sand mortar in perfect line and level all complete	m2	63.55				
L	Miscellaneous Works	-	-	-	-	-	
1	Providing and fixing collapsable gate (4" gap and 40 kg/m2) all complete as per instruction of Engineer	m2	4.18				
2	Supply & fixing stair railing (MS black pipe for handrail 1.5" mm and 1" square pipe vertical post @ 6" with fixing, painting all complete as per instruction of Engineer.	rm	12.00				
3	Providing and fixing 1.5 " steel tibular purlin and rafter, including 26# heavy CGI for roof covering for stair room all complete as per instruction of Engineer.	job	1.00				
4	Site Clearance before and after completion of Work	job	1.00				
M	Sanitary Works						
1	Providing & fixing of approved quality G.I. and Sanitary fittings accessories as per specification with site requirement or instruction of engineer.						
1.1	Indian pattern Comode,Seat cover with low level flushing cistern constallation type.	set	2.00				

S.N	Description of Works	Unit	Quantity	Rate		T.Amount	Remarks
				In Numbers	In Words		
1.2	580MM Porcelain clay white glaze Orissa Pan (Hindustan, Parryware, Classica, Cera equivalent	set	1.00				
1.3	55 x 40 CM Porcelain clay white glaze Wash Basin (Hindustan, Parryware, Classica, Cera equivalent	set	3.00				
1.4	61x41x38cm Large Flat black white galzed urinal (Hindustan, Parryware, Classica, cera or equivalent) with separator and water sprayer as required.	set	3.00				
1.5	CP Angle Cock (Model 2001)	nos.	5.00				
1.6	CP Towel Rod 18" (steel)	nos.	3.00				
1.7	CP Concil Bib Cock-12MM (Heavy Duty)	nos.	3.00				
1.8	CP Fency Type Tap (Long Body, Model 2001)	nos.	3.00				
1.9	CP Conceild Cock (Model 2001)	nos.	3.00				
1.10	CP Nipple (Short) - Model 2001	nos.	6.00				
1.11	CP Nipple (Long) - Model 2001	nos.	6.00				
1.12	CP Piller Cock, Priti (NS)	nos.	3.00				
1.13	CP Shower Fancy	nos.	1.00				
1.14	CP Soap Case	nos.	3.00				
1.15	Glass Shelf (Steel)	nos.	3.00				
1.16	Brass Tap 1/2" 400 grm.	nos.	3.00				
1.17	Connenction Pipe	nos.	6.00				
2	Providing and fixing in position Nepatop PPR pipe or equivalent with necessary pipe fittings ISI marks such as elbow, T, union, nipple etc. including nailing clamping, groove cutting, whole cutting and repairing the same to original condition after concealing the pipes where required, lagging the concealed pipe with Hessian cloth dipped in hot black bitumin painting the pipe with black japan paint outside all complete as directed by site engineer and ready for use.						
2.1	1/2"Ø PPR Pipe with fittings	rm	6.00				
2.2	3/4"Ø PPR Pipe with fittings	rm	6.00				

S.N	Description of Works	Unit	Quantity	Rate		T.Amount	Remarks
				In Numbers	In Words		
3.00	Providing and laying in position for HDP sewerage pipeline including excavation of earth to any soil, any depth as per need and refilling the trench, removing surplus earth and dumping to a distance as directed as per specification and instruction of site engineer all complete						
3.10	110MM(4")Ø H.D.P.E. PIPE (Series-V) with fittings	rm	30.00				
4.00	Providing and placing, fixing of 1000 Lit. capacity HDP water tank as per specification or instruction of engineer.						
	1000 lit. capacity HDP Tank	set	1.00				
N	<u>ELECTRIFICATION WORKS</u>					-	
1	Supply and Fixing of LIGHTING & FAN ACCESSORIES					-	
1.1	Supply and fittings of 4 ' long Tube light (1X36 W FTL , Decorative Luminaire Chok type) Bajaj or equivalent all complete	Set	12.00				
1.2	Supplying and Fitting of 8" CFL bulb light with all complete accessories as per instruction of Engineer	Set	4.00				
2	Supply and fitting of Shocket switch Junction Box Assoceries mettal box screw grives PVC tape etc. all complete						
2.1	15 Amp. Combined / power shocket flush type North/ west or eqvt.	Set	15.00				
2.2	1 gang one way swithc Northwest or eqv.	Set	3.00				
2.3	2 gang one way 'swithc Northwest or eqv.	Set	8.00				
2.4	3 gang one way swithc Northwest or eqv.	Set	4.00				
2.5	4 gang one way swithc Northwest or eqv.	Set	7.00				
2.6	6 gang one way 'swithc Northwest or eqv.	Set	12.00				
2.7	Junction Box made of mettal with cover sige 6" *4" etc.	Set	10.00				
3	Supply and fitting of Main switch DB Assoceries screw grives cable shoe face bar PVC tape nut bolt porceling base with 8 way DB box etc. all complete	set	3.00				

S.N	Description of Works	Unit	Quantity	Rate		T.Amount	Remarks
				In Numbers	In Words		
4	6- 32 AMP DP MCB GECO / simens or eqvt. For power circuit.	Set	20.00				
5	Point wiring / wires :-Assoceries,HDP polythene pipe screw pipe kila, PVC tape grives circular box etc. all complete						
5.1	2*3 /20 +1/18 PVC Cu. wire For light and fan point 1/2" HDP pipe	pt	50.00				
5.2	2*7 /22 +1*3/20 PVC Cu. Wire For power point in 3/4" HDP pipe	pt	20.00				
6	Telephone socket flush type CPL or equt	set	5.00				
7	Two pair Telephone cable wire(2x2x0.45) in 1/2" HDP polythene pipe etc all complete	Rm	100.00				
8	10 pair Telephone cable wire (20x2x0.45)mm for main in HDP Polithine pipe etc. all complete.	set	1.00				
O	Provisional Cost for Insurance, (The payment will be made as per submitted invoices)	job	1.00	50,000.00		50,000.00	
P	Provisional sum for additional lab Test as instructed by the employer	job	1.00	25,000.00		25,000.00	
Q	Prepration of as built drawing	job	1.00				
R	Making film and photographs of construction works	job	1.00				
				Sub Total			
				VAT @ 13 %			
				Grand Total			
	Grand Total In Words Including VAT:						
	Authorized Signature of Bidder:				Bidder Stamp:		
	Name of Bidder :						
	Name of Firm :						



Section X. Forms of Securities



Bid Security (Bank Guarantee)

Whereas, [name of Bidder] (hereinafter called "the Bidder") has submitted his bid dated [date] for the construction of [name of Contract] (hereinafter called "the bid").

Know all people by these presents that We [name of Bank] of [name of country] having our registered office at [address] (hereinafter called "the Bank") are bound unto [name of Employer] (hereinafter called "the Employer") in the sum of [amount]¹ for which payment well and truly to be made to the said Employer, the Bank binds itself, its successors, and assigns by these presents.

Sealed with the Common Seal of the said Bank this [day] day of [month], [year].

The conditions of this obligation are:

- (1) If, after bid opening, the Bidder withdraws his bid during the period of bid validity specified in the Form of Bid; or
- (2) If the Bidder having been notified of the acceptance of his bid by the Employer during the period of bid validity:
 - (a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or
 - (b) fails or refuses to furnish the Performance Security, in accordance with the Instruction to Bidders; or
 - (c) does not accept the correction of the bid,

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

This Guarantee will remain in force up to and including the date [number] days² after the deadline for submission of bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

Date _____ Signature of the Bank _____

Witness _____ Seal _____

[signature, name, and address]

¹ The Bidder should insert the amount of the Guarantee in words and figures denominated in Nepali Rupees. This figure should be the same as shown in Clause 13 of the Instructions to Bidders.

² Usually 30 days after the end of the validity period of the bid. The date should be inserted by the Employer before the bidding documents are issued.



(Handwritten signature)

Performance Bank Guarantee

To: *[name and address of Employer]*

Whereas *[name and address of contractor]* (hereinafter called “the contractor”) has undertaken, in pursuance of Contract No. *[number]* dated *[date]* to execute *[name of Contract and brief description of Works]* (hereinafter called “the Contract”);

And whereas it has been stipulated by you in the said Contract that the contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

And whereas we have agreed to give the contractor such a Bank Guarantee;

Now therefore we hereby affirm that we are the Guarantor and responsible to you, on behalf of the contractor, up to a total of *[amount of Guarantee]* *[amount in words]*³ such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of *[amount of Guarantee]*⁴ as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the contractor shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any such change, addition, or modification.

This Guarantee shall be valid for at least 30 days beyond the date of issue of Defects Liability Certificate.

Signature and seal of the Guarantor _____

Name of Bank _____

Address _____

Date _____

³ An amount is to be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract, and denominated in Nepalese Rupees.

⁴ The Unconditional (or “On-Demand”) Bank Guarantee has the merit of simplicity and of being universally known and accepted by commercial banks. The contracting community, however, strongly objects to this type of Security because the Guarantee can be called (or threatened to be called) by Employers without justification. Employers should recognize the contractual conditions governing nonperformance by the Contractor and should normally act only on the advice of the Project Manager in calling a Performance Guarantee.



[Handwritten signature]

Bank Guarantee for Advance Payment

To: [name and address of Employer]

[name of Contract]

Gentlemen:

In accordance with the provisions of the Conditions of Contract, Sub clause 11.9("Advance Payment") of the above-mentioned Contract, [name and address of contractor] (hereinafter called "the contractor") shall deposit with [name of Employer] a Bank Guarantee to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of [amount of Guarantee] [amount in words]⁵

We, the [Bank or Financial Institution], as instructed by the contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to [name of Employer] on his first demand without whatsoever right of objection on our part and without his first claim to the contractor, in the amount not exceeding [amount of Guarantee] [amount in words]⁶

We further agree that no change or addition to or other modification of the terms of the Contract or of Works to be performed there under or of any of the Contract documents which may be made between [name of Employer] and the contractor, shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any such change, addition, or modification.

The validity period of the guarantee shall be 30 days beyond the period scheduled for repayment of the advance payment and the guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until the [name of Employer] receives full repayment of the same amount from the Contractor.

Yours truly,

Signature and seal: _____

Name of Bank/Financial Institution: _____

Address: _____

Date: _____

⁵ An amount is to be inserted by the Bank or Financial Institution representing the amount of the Advance Payment, and denominated in Nepali Rupees of the Advance Payment as specified in the Contract.

⁶ An amount is to be inserted by the Bank or Financial Institution representing the amount of the Advance Payment, denominated in Nepali Rupees.



Section XI. Declaration Form (For E-bidding)

Nepal Electricity Authority

Declaration Form (for E-bidding)

S.No.	Description	Status			
		Issued to	Issued by	Date of	No. of
		(as applicable)	(as applicable)	Issue	Pages
1	Notarized Power of Attorney from the Company to Sign on Company's behalf (For Single Bidder)				
2	Joint Venture Agreement; <i>If any</i>				
3	Notarized Power of Attorney to Sign the Bid on Company's behalf (Each Partner in case of JV)				
4	Notarized Power of Attorney to Sign the Bid (On Behalf of JV)				
5	Registration Certificate of the Bidder (and each partners in case of JV)				
6	Bid Security				
7	Price Schedule				
8	Bid Form				
9	Qualification Forms				
10	Complete Certified Audited Report of the Bidder (and each partner in case of JV)	Year 1			
		Year 2			
		Year 3			
11	Performance (or user) Certificate/s (Bidder)	1			
		2			
		3			
		4			
12	Manufacturer's Authorization/s	1			
		2			
		3			
		4			



Handwritten signature

13	Power of Attorney from the Company to Issue the Manufactures Authorization				
14	Business License of Manufacturer/s	1			
		2			
		3			
		4			
15	User Certificate/s (Manufacturer)	1			
		2			
		3			
		4			
16	ISO Certificate	1			
		2			
		3			
		4			
17	Type Test Report/s (if required as per specification)	1			
		2			
		3			
		4			
18	Technical Data Sheet	1			
		2			
		3			
		4			
19	Other Certification (as per requirements)	1			
		2			
		3			
		4			