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

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

# BID DOCUMENT
# FOR
# BOUNDARY WALL CONSTRUCTION WORKS
# at
# TAPLEJUNG DCS

**TENDER NO: NEA-TPLGDC-2073/074-01 Tender**

## MAY. 2017

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

# 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 | 15 |
| Section V. | General Conditions of Contract (GCC) | 21 |
| Section VI. | Special Conditions of Contract (SCC) | 31 |
| Section VII. | Technical Specifications | 32 |
| Section VIII. | Drawings | 72 |
| Section IX. | Bill of Quantities | 75 |
| Section X | Sample Forms of Securities | 79 |
| Section XI. | Declaration Form (For E-bidding) | 83 |

# Section I. Invitation to Bids

## सिलबन्दी बोलपत्र/दरभाउपत्र आह्वानको सूचना

(गोरखापत्र दैनिकमा सूचना प्रकाशित मिति : २०७४।०२।१७)

यस कार्यालय तथा अन्तर्गतका वितरण केन्द्रबाट निम्नलिखित कार्य सिलबन्दी बोलपत्र/दरभाउपत्रबाट आपूर्ति/निर्माण गराउनु पर्ने भएकोले सम्बन्धित कार्यको लागि नेपाल सरकारबाट इजाजत प्राप्त, मूल्य अभिवृद्धि कर (VAT), PAN मा दर्ता भएका, आयकर तिरेका, रजिष्टर्ड निर्माण कम्पनी/आपूर्ति कर्ता वा अख्तियार प्राप्त फर्मबाट निम्नलिखित सर्तको अधीनमा रही कार्य गर्न राष्ट्रिय स्तरको सिलबन्दी बोलपत्र/दरभाउपत्र आह्वान गरिएको छ।

१. बोलपत्र/दरभाउपत्र E-Bidding System बाट खरिद गर्न र दाखिला गर्न ने.वि.प्रा.को Website www.e-nea.org.np मा राखिएको छ। इच्छुक बोलपत्र/दरभाउपत्रदाताले थप जानकारीका लागि ने.वि.प्रा.को उक्त website हेर्नु हुनेछ।

२. बोलपत्र/दरभाउपत्रसम्बन्धी कागजात यो सूचना गोरखापत्रमा प्रकाशित भएको मिति २०७४।०२।१७ देखि बोलपत्रको हकमा मिति २०७४।०३।१५ सम्म र दरभाउपत्रको हकमा मिति २०७४।०२।३१ सम्म सम्बन्धित कार्यालयको तल उल्लेखित बैकमा तल उल्लेखित रकम (फिर्ता नहुने) जम्मा गरी सोको सक्कल बैक भौचर, चालु आ.व.को लागि नवीकरण भएको निर्माता/आपुर्तिकर्ताको फर्म दर्ता प्रमाणपत्र, व्यवसाय दर्ता प्रमाणपत्र, VAT, PAN दर्ता प्रमाणपत्र, अध्यावधिक करचुक्ता प्रमाणपत्र (सबै प्रमाणपत्रहरूको प्रमाणित प्रतिलिपी) र सक्कल अख्तियारनामासहित निवेदन दिई सम्बन्धित कार्यालयबाट कार्यालय समयभित्र खरिद गर्न सकिने छ।

३. बोलपत्र मिति २०७४।०३।१६ गते दिनको १२.०० बजेसम्ममा र सिलबन्दी दरभाउपत्र मिति २०७४।०३।०१ गते दिनको १२.०० बजेसम्ममा सम्बन्धित वितरण केन्द्रमा दर्ता गराई सक्नु पर्ने छ। बोलपत्र/सिलबन्दी दरभाउपत्र दर्ता भएको दिन तल उल्लेखित समयमा बोलपत्र/दरभाउपत्रदाता वा निजको अख्तियार प्राप्त प्रतिनिधिको उपस्थिति/अनुपस्थितिमा सम्बन्धित वितरण केन्द्रमा खोलिने छ।

४. सिलबन्दी बोलपत्र/दरभाउपत्र खरिद, दाखिला एवं खोलिने अन्तिम दिन बिदा पर्न गएमा सोको भोलिपल्ट सरेको मानिने छ।

५. सिलबन्दी बोलपत्र/दरभाउपत्रसाथ बोलपत्र/दरभाउपत्रको तल उल्लेखित जमानत (बिडबण्ड) बापतको रकम सम्बन्धित वितरण केन्द्रको तल उल्लेखित बैक खातामा जम्मा गरी सोको सक्कल बैक भौचर वा नेपाल राष्ट बैंकबाट मान्यता प्राप्त कुनै पनि वाणिज्य बैंकबाट सम्बन्धित वितरण केन्द्रको नाममा जारी गरिएको बोलपत्रको हकमा बोलपत्र पेस गर्ने अन्तिम मितिले १२० (एक सय बीस) दिन र दरभाउपत्रको हकमा दरभाउपत्र खोलिने मितिले कम्तीमा ७५ दिन म्याद भएको सर्त रहित बैक जमानीपत्र वा बैक ड्राफ्ट अनिवार्यरूपमा पेस गर्नु पर्ने छ। बोलपत्रको मान्य अवधि ९० दिन र दरभाउपत्रको मान्य अवधि ४५ दिन हुनेछ।

६. बोलपत्र/दरभाउपत्रदाताले कबोल गरेको दररेट तथा कुल रकम अंक र अक्षरमा प्रष्ट हुने गरी उल्लेख गर्नु पर्ने छ। अंक र अक्षरमा फरक परेमा अक्षरलाई मान्यता दिइने छ।

७. बोलपत्र/दरभाउपत्रदाताले सिलबन्दी बोलपत्र/दरभाउपत्रको खाम बाहिर सम्बन्धित कार्यालयको नाम, ठेगाना, बोलपत्र/दरभाउपत्र नम्बर, कार्य विवरण र बोलपत्र/दरभाउपत्रदाताको छाप नाम, ठेगाना, स्पष्ट उल्लेख गर्नुपर्नेछ।

८. फ्याक्स, टेलिग्राम वा ईमेलबाट प्राप्त बोलपत्र/दरभाउपत्र फारामलाई मान्यता दिइने छैन।

९. सिलबन्दी बोलपत्र/दरभाउपत्र पूर्ण वा आंशिक रूपमा स्वीकृत गर्ने वा नगर्ने (कारण जनाइ वा नजनाइ) सम्पूर्ण अधिकार सम्बन्धित कार्यालयमा निहित रहने छ।

१०. सिलबन्दी बोलपत्र/दरभाउपत्रसम्बन्धी अन्य थप कुरा बुझ्नु परेमा सम्बन्धित कार्यालयमा कार्यालय समयभित्र सम्पर्क राख्न सकिने छ।

| सि. नं. | बोलपत्र/दरभाउपत्र नम्बर | कामको विवरण | बोलपत्र/दरभाउपत्रको मूल्य रु. | बोलपत्र/दरभाउपत्रको जमानत रु. | निर्माण कार्यको लागत अनुमान VAT समेत रु. | बोलपत्र/दरभाउपत्र खरिद गर्न सम्बन्धित कार्यालयको बैक र खाता नं. | बिडबण्ड जम्मा गर्न सम्बन्धित कार्यालयको बैक र खाता नं. | बोलपत्र/दरभाउपत्र खोलिने मिति र समय | सम्बन्धित कार्यालय |
|---|---|---|---|---|---|---|---|---|---|
| १ | NEA-RDC-2073/074-01,SQ | Open Yard Construction works at Rangeli | ५००।०० | १२,५००।०० | ४,९७,०४३।९६ | नेपाल बैक लि.,रङ्गेली ०३१००१०११४८१४६०००००१ | नेपाल बैक लि.,रङ्गेली ०३१००१०११५१३३६०००००१ | २०७४।०३।०१ दिनको १४:०० बजे | रङ्गेली वितरण केन्द्र ०२१-४८०६४३ |
| २ | NEA-RDC-2073/074-02,SQ | Office Building Painting Works at Rangeli | ५००।०० | १०,०००।०० | ३,९६,८११।३० | नेपाल बैक लि.,रङ्गेली ०३१००१०११४८१४६०००००१ | नेपाल बैक लि.,रङ्गेली ०३१००१०११५१३३६०००००१ | २०७४।०३।०१ दिनको १४:३० बजे | रङ्गेली वितरण केन्द्र ०२१-४८०६४३ |
| ३ | NEA-RDC-2073/074-03,SQ | Access Road Upgrading and Construction works at Rangeli | ५००।०० | १२,५००।०० | ४,९८,५६७।४५ | नेपाल बैक लि.,रङ्गेली ०३१००१०११४८१४६०००००१ | नेपाल बैक लि.,रङ्गेली ०३१००१०११५१३३६०००००१ | २०७४।०३।०१ दिनको १४:०० बजे | रङ्गेली वितरण केन्द्र ०२१-४८०६४३ |
| ४ | NEA-DhanDC-2073/074-05, SQ | Boundary Wall Construction works (II Phase) at Hile dhankuta | ५००।०० | १८,०००।०० | ६,९९,२२३।९२ | राष्ट्रिय बाणिज्य बैक धनकुटा राजश्व खाता ४४२ | राष्ट्रिय बाणिज्य बैक धनकुटा, धरौटी खाता ११७० | २०७४।०३।०१ दिनको १४:०० बजे | धनकुटा वितरण केन्द्र ०२६-४२००९१ |
| ५ | NEA-BLDC-2073/074-03,SQ | Vehicle parking Shed Construction works at Belbari DCS, Belbari | ५००।०० | १२,५००।०० | ४,९८,५४५।७० | प्रभु बैक, बेलबारी ०८७००१०००३००६०००००४४ | एन एम बि बैक, बेलबारी ०५४३०४००३०५६४९०००००१ | २०७४।०३।०१ दिनको १४:०० बजे | बेलबारी वितरण केन्द्र ०२१-५४६०८६ |
| ६ | NEA-BRT-DC-2073/074- 06, SQ | Temple Upgrading Works at Rani & Toilet maintenance works at Biratnagar DCS, Biratnagar | ५००।०० | २४,०००।०० | ९,४६,६७९।५४ | सिद्धार्थ बैक लि., विराटनगर ००३१५०७८०५८ | नेपाल अरब बैक, विराटनगर ०७०१०१०२०३६०१ | २०७४।०३।०१ दिनको १४:०० बजे | विराटनगर वितरण केन्द्र ०२१-५२५२५५ |
| ७ | NEA-BRO-2073/074- 02, SQ | Open Store Yard Construction works at Rani, Biratnagar | ५००।०० | १०,०००।०० | ३,९९,७५८।२७ | नविल बैक विराटनगर ०७०६०१७५०००१८ | नविल बैक विराटनगर ०७०६०१७५०००१६ | २०७४।०३।०१ दिनको १४:०० बजे | विराटनगर क्षेत्रीय कार्यालय,०२१-४३६३०६ |
| ८ | NEA-BRO-2073/074- 03, SQ | Access Road Maintenance & Construction works at Biratnagar Regional Office, Biratnagar | ५००।०० | १५,०००।०० | ५,९७,१९१।८० | नविल बैक विराटनगर ०७०६०१७५०००१८ | नविल बैक विराटनगर ०७०६०१७५०००१६ | २०७४।०३।०१ दिनको १४:३० बजे | विराटनगर क्षेत्रीय कार्यालय,०२१-४३६३०६ |
| ९ | NEA-BRO-2073/074- 04, SQ | Boundary wall Construction works Biratnagar Regional Office, Biratnagar | ५००।०० | १५,०००।०० | ५,९५,६५९।३५ | नविल बैक विराटनगर ०७०६०१७५०००१८ | नविल बैक विराटनगर ०७०६०१७५०००१६ | २०७४।०३।०१ दिनको १४:०० बजे | विराटनगर क्षेत्रीय कार्यालय,०२१-४३६३०६ |
| १० | NEA-TPLGDC-2073/074-01,Tender | Boundary wall Construction works at Taplejung DCS, Taplejung | ३,०००।०० | ७७,०००।०० | ३०,६६,३२६।२४ (VAT बाहेक) | नविल बैक विराटनगर ०७०६०१७५०००१८ | नविल बैक विराटनगर ०७०६०१७५०००१६ | २०७४।०३।१६ दिनको १४:०० बजे | विराटनगर क्षेत्रीय कार्यालय,०२१-४३६३०६ |

**नेपाल विद्युत् प्राधिकरण**

विराटनगर क्षेत्रीय कार्यालय, विराटनगर, फोन ०२१-४३६३०६

# Section II. Instructions to Bidders

## 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:<br>Section<br>I. Invitation for Bids<br>II. Instructions to Bidders<br>III. Sample Forms of Bid, Letter of Acceptance and Agreement<br>IV. General Conditions of Contract (GCC)<br>V. Special Conditions of Contract (SCC)<br>VI. Technical Specifications<br>VII. Drawings<br>VIII. Bill of Quantities<br>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:<br>a. Bid and Qualification/ Eligibility Information<br>b. Bid Security<br>c. Priced Bill of Quantities<br>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. |

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| | 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.<br>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<br>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.<br>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 |

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| | 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.<br><br>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.<br><br>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.<br><br>The Employer shall prepare and provide minutes of the bid opening including the information disclosed to those present. |
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| **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.<br><br>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.<br><br>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.<br><br>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 |

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| | 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.<br><br>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:<br><br>a where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern; and<br><br>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.<br><br>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.<br>24.2 Further the employer shall evaluate :<br>a) Whether the construction work plan, work performance schedule and mobilization period is consistent with the requirement of the bidding document or not,<br>b) Whether the quoted item unit rates in the Bill of quantities are reliable or not,<br>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.<br><br>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;<br><br>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.<br><br>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 |

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| | 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 Clause2. |
| | |
| **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** | 27.1The 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.<br><br>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.<br><br>27.3If 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.<br><br>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 |

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| | by an "A" class commercial Bank in Nepal.<br><br>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.<br><br>ii) For the bid price less than 15 percent of the cost estimate, the performance security amount shall be determined as follows:<br><br>Performance Security Amount = [(0.85 x Cost Estimate –Bid Price) x 0.5] + 5% of Bid Price.<br><br>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.<br><br>32.2 The Bidder shall not carry out or cause to carryout the following acts with an intention to influence the implementation of the procurement process or the procurement agreement :<br><br>a) give or propose improper inducement directly or indirectly,<br><br>b) distortion or misrepresentation of facts<br><br>c) engaging or being involved in corrupt or fraudulent practice<br><br>d) interference in participation of other prospective bidders.<br><br>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,<br><br>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..<br><br>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 |

[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.*

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| **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:<br>a) if it is proved that the bidder committed acts pursuant to the Sub - Clause 32.2,<br>b) if the bidder fails to sign an agreement pursuant to Sub - Clause 27.4,<br>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 ,<br>d) if convicted by a court of law in a criminal offence which disqualifies the bidder from participating in the contract.<br>e) if it is proved that the contract agreement signed by the bidder was based on false or misrepresentation of bidder's qualification information,<br>f) other acts mentioned in the Bidding Data<br><br>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

### A. General

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| **ITB 1** | The Employer is: **Nepal Electricity Authority, Distribution and Consumer Service Directorate, Biratnagar Regional Office, Taplejung Distribution Center, Taplejung**<br><br>The Scope of Work: **Boundary Wall Construction Works at Taplejung DCS** |
| **ITB 2** | Bidder's Eligibility Requirement:<br>a) Registration Certificate<br>b) Business Registration Licence<br>c) VAT and PAN Registration Certificates<br>d) Tax Clearance Certificate or Submissions of Tax Returns up to ***Fiscal year2072/073***<br>e) A written declaration made by the Bidder stating that the Bidder is not ineligible to participate in the Bid; has no conflict of interest in the proposed bid procurement proceedings and has not been punished for the profession or businesses related offence.<br>f) Joint Venture Authorization/ Agreement (if any)<br>g) Power of Attorney |

### B. Bidding Documents

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| **ITB 7** | Employer's address for **clarification purposes** is**: Nepal Electricity Authority, Distribution and Consumer Service Directorate, Biratnagar Regional Office ,Rani Biratnagar**<br><br>Requests for clarification should be received by the Employer no later than 10 days prior from last date of bid submission. |

### C. Preparation of Bids

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| **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** | Amount of Bid Security is **NRs. 77,000.00 (Seventy Seven thousand Only)**<br><br>The bid security validity period shall be**: 120 *days from the last date of Bid Submission***<br><br>The Bank Account of the Employer: **0706017500018, Nabil Bank Biratnagar** |

## D. Submission of Bids

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| **ITB 15** | A Pre-Bid meeting ***shall*** take place.<br>Date: ***2074/03/01***<br>Time: **2:00 PM**<br>Place: Nepal Electricity Authority, Distribution and Consumer Service Directorate**, Biratnagar Regional Office, Rani Biratnagar** |
| **ITB 16** | The Employer's address for **bid submission purposes** is: Nepal Electricity Authority, Distribution and Consumer Service Directorate, **Biratnagar Regional Office, Rani Biratnagar**<br>**The deadline for bid submission is:**<br>Date: **2074/03/16**<br>Time: **12:00 Noon** |

## E. Bid Opening and Evaluation

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| **ITB 19** | The bid opening shall take place at:<br>Address: Nepal Electricity Authority, Distribution and Consumer Service Directorate, **Biratnagar Regional Office, Rani Biratnagar**<br>Date: **2074/03/16**<br>Time: **2:00 PM** |

## F. Award of Contract

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| **ITB 29** | The Advance Payment amount shall be: ***20% of Contract Amount.*** |
| **ITB 31** | The Adjudicator proposed by the Employer is<br>The hourly fee for this proposed Adjudicator shall be<br>Brief biographical data of the proposed Adjudicator is as follows : |

# 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).

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]

W e 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:

***a)*** Registration Certificate ***[ attach copy]***
***b)*** Place of Registration ***[ insert ]***
***c)*** Principal place of Business ***[insert address]***
**d)** Business Registration Licence ***[attach copy]***
***e)*** VAT and PAN Registration Certificates ***[attach copy]***
***f)*** Tax Clearance Certificate or Submissions of Tax Returns as specified in Bidding Data ***[attach copies]***
**g)** 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.
**h)** Joint Venture Authorization/ Agreement (if any)
**i)** 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 [3]in 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 modified[4] in accordance with the Instructions to *Bidder*s 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.*

# 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 (GCC)

## 1. General Provisions

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| **1.1 Definitions** | In the Contract as defined below, the words and expressions defined shall have the following meanings assigned to them, except where the context requires otherwise: | |
| **The Contract** | 1.1.1 | "**Contract**" means the Agreement signed between the Employer and the contractor and the other documents listed in the Special Conditions of Contract (SCC). |
| | 1.1.2 | "**Specification**" means the document as listed in the SCC, including Employer's requirements in respect of design to be carried out by the contractor, if any, and any variation to such document. |
| | 1.1.3 | "**Drawings**" means the Employer's drawings of the Works as listed in the SCC, and any variation to such drawings. |
| | 1.1.4 | "**Bill of Quantities**" means the priced and completed bill of quantities forming part of the Tender. |
| | 1.1.5 | "**Bid or Tender**" means the contractor's priced offer to the Employer for the execution and completion of the Works and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Acceptance. |
| | 1.1.6 | "**Letter of Acceptance**" means the formal acceptance by the Employer of the **bid** or Tender. |
| **Persons** | 1.1.7 | "**Employer**" means the person named in the Agreement and the legal successors in title to this person, but not (except with the consent of the contractor) any assignee. |
| | 1.1.8 | "**Contractor**" means the person named in the Agreement and the legal successors in title to this person, but not (except with the consent of the Employer) any assignee. |
| | 1.1.9 | "**Party**" means either Employer or the contractor. |
| **Date, Times and Periods** | 1.1.10 | "**Commencement Date**" means the date 14 days after the date the Agreement comes into effect or any other date agreed between the Parties. |
| | 1.1.11 | "**Day**" means a calendar day. |
| | 1.1.12 | "**Time for Completion**" means the time for completing the Works as stated in the SCC (or as extended under Sub-Clause 7.3), calculated from the Commencement Date. |
| **Money and Payments** | 1.1.13 | "**Cost**" means all expenditure properly incurred (or to be incurred) by the contractor, whether on or off the Site, including overheads and similar charges, but does not include profit. |
| | 1.1.14 | "**Contract Price**"is the price stated in the letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract. |
| | 1.1.15 | "**Retention Money**" means the aggregate of all monies retained by the Employer pursuant to Sub-Clause 11.3. |
| **Other Definitions** | 1.1.16 | "**Contractor's Equipment**" means all apparatus, machinery, vehicles, facilities and other things required for the execution of the |

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| | Works but does not include Materials or Plant.<br><br>1.1.17 "**Country**" means Nepal.<br><br>1.1.18 "**Employer's Liabilities**" means those matters listed in Sub-Clause 6.1.<br><br>1.1.19 "**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.<br><br>1.1.20 "**Materials**" means things of all kinds (other than Plant) intended to form or forming part of the permanent work.<br><br>1.1.21 "**Plant**" means the machinery and apparatus intended to form or forming part of the Permanent Works.<br><br>1.1.22 "**Site**" means the places provided by the Employer where the Works are to be executed, and any other places specified in the Contract as forming part of the Site.<br><br>1.1.23 "**Variation**" is an instruction given by the Employer which varies the Works pursuant to Sub-Clause 10.1<br>1.1.24 "**Works**" means all the work and design (if any) to be performed by the contractor including temporary work and any Variation.<br><br>1.1.25 "**Permanent Works**" means the permanent works to be executed (Including Plant) in accordance with the Contract.<br><br>1.1.26 "**Temporary Works**" means all temporary works of every kind (other than contractor's Equipment) required in or about the execution and completion of the Works and the remedying of any defects therein.<br><br>1.1.27 "**Adjudication**" means the procedure to be adopted by the contractor and the Employer in solving the dispute if it is not solved amicably pursuant to Sub-Clause 15.1. |
| **1.2 Interpretation** | Words importing persons or parties shall include firms and organisations. Words importing singular or one gender shall include plural or the other gender where the context requires. |
| **1.3 Priority of Documents** | The documents forming the Contract shall to be taken as mutually explanatory of one another. If an ambiguity or discrepancy is found in the documents, the Employer shall issue any necessary instructions to the contractor, and the priority of the documents shall be in accordance with the order as listed in the SCC. |
| **1.4 Law** | The law of the Contract is stated in the SCC. |
| **1.5 Communications** | Where provision is made for the giving or issue of any notice, instruction, or other communication by any person, unless otherwise specified such communication shall be written in the language stated in the SCC as shall not be unreasonably withheld or delayed.<br>If a notice given pursuant to Sub-Clause 1.5 fails to be delivered due to failure to trace the address of the party then the notice shall be published as public notice in a National daily newspaper and when the notice is so published then the notice shall be considered to be delivered to the concerned party. |
| **1.6 Statutory Obligations** | The contractor shall comply with the laws of the countries where activities are performed. The contractor shall give all notices and pay all fees and other charges in respect of the Works. |

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| **2.** | **The Employer** | |
| **2.1** | **Provision of Site** | The Employer shall provide the Site and right of access thereto at the times stated in the SCC. |
| **2.2** | **Permits and Licenses** | The Employer shall, if requested by the contractor, assist him in applying for permits, licences or approvals which are required for the Works. |
| **2.3** | **Employer's Instructions** | The contractor shall comply with all instructions given by the Employer in respect of the Works including the suspension of all or part of the Works. |
| **2.4** | **Approvals** | No approval or consent or absence of comment by the Employer or the Employer's representative shall affect the contractor's obligations. |
| **3.** | **Employer's Representatives** | |
| **3.1** | **Authorised Person** | One of the Employer's personnel shall have authority to act for him. This authorised person shall be as stated in the SCC, or as otherwise notified by the Employer to the contractor. |
| **3.2** | **Employer's Representative** | The Employer may also appoint a firm or individual to carry out certain duties. The appointee may be named in the SCC, or notified by the Employer to the contractor from time to time. The Employer shall notify the contractor of the delegated duties and authority of this Employer's representative. |
| **4.** | **The Contractor** | |
| **4.1** | **General Obligations** | The contractor shall carry out the Works properly and in accordance with the Contract. The contractor shall provide all supervision, labour, Materials, Plant and contractor's Equipment which may be required. All Materials and Plant on Site shall be deemed to be the property of the Employer.<br><br>During continuance of the of the contract, the contractor and his sub-contractors shall abide at all times by all labour laws, including child labour related enactments, and rules made there under.<br><br>A child who has not attained the age of fourteen (14) years shall not be employed in any work as a labourer. |
| **4.2** | **Contractor's Representative** | The contractor shall submit to the Employer for consent the name and particulars of the person authorised to receive instructions on behalf of the contractor. |
| **4.3** | **Subcontracting** | The contractor shall not subcontract the whole of the Works. The contractor shall not subcontract any part of the Works without the consent of the Employer. |
| **4.4** | **Performance Security** | As stated in the SCC, the Contractor shall deliver to the Employer no later than the date specified in the Letter of Acceptance. |
| **5.** | **Design by Contractor** | |
| **5.1** | **Contractor's Design** | The contractor shall carry out design to the extent specified, as referred to in the SCC. The contractor shall promptly submit to the Employer all designs prepared by him. Within 15 days of receipt, the Employer shall notify any comments or, if the design submitted is not in accordance with the Contract, shall reject it stating the reasons. The contractor shall not construct any element of the permanent work designed by him within 15 days after the design has been submitted to the Employer or where the design for that element has been rejected. Design that has been rejected shall be promptly amended and resubmitted. The contractor shall resubmit all designs commented on taking these comments into account as necessary. |
| **5.2** | **Responsibility for Design** | The contractor shall remain responsible for his tendered design and the design under this Clause, both of which shall be fit for the intended purposes defined in the Contract and he shall also remain responsible for any infringement of any patent or copyright in respect of the same. The Employer shall be responsible for the Specification and Drawings. |
| **6.** | **Employer's Liabilities** | |
| **6.1** | **Employer's Liabilities** | In this Contract, Employer's Liabilities mean:<br>a. war, hostilities (whether war be declared or not), invasion, act of foreign enemies, within the Country, |

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| | b. rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war, within the Country,<br>c. riot, commotion or disorder by persons other than the contractor's personnel and other employees, affecting the Site and/or the Works,<br>d. ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component of such an assembly, except to the extent to which the contractor may be responsible for the use of any radio-active material,<br>e. pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,<br>f. use or occupation by the Employer of any part of the Works, except as may be specified in the Contract,<br>g. design of any part of the Works by the Employer's personnel or by others for whom the Employer is responsible,<br>h. any operation of the forces of nature affecting the Site and/or the Works, which was unforeseeable or against which an experienced contractor could not reasonably have been expected to take precautions,<br>i. Force Majeure,<br>j. a suspension under Sub-Clause 2.3 unless it is attributable to the contractor's failure,<br>k. any failure of the Employer,<br>l. physical obstructions or physical conditions, other than climatic conditions, encountered on the Site during the performance of the Works, which obstructions or conditions were not reasonably foreseeable by an experienced contractor and which the contractor immediately notified to the Employer,<br>m. any delay or disruption caused by any Variation,<br>n. any change to the law of the Contract after the date of the contractor's offer as stated in the Agreement,<br>o. losses arising out of the Employer's right to have the permanent work executed on, over, under, in or through any land, and to occupy this land for the permanent work, and<br>p. damage which is an unavoidable result of the contractor's obligations to execute the Works and to remedy any defects. |
| **7. Time for Completion** | |
| **7.1 Execution of the Works** | The contractor shall commence the Works on the Commencement Date and shall proceed expeditiously and without delay and shall complete the Works within the Time for Completion. |
| **7.2 Programme** | The contractor shall submit to the Employer a programme for the Works within the time stated in the SCC |
| **7.3 Extension of Time** | Subject to Sub-Clause 10.3, the contractor shall be entitled to an extension to the Time for Completion if he is or shall be delayed by any of the Employer's Liabilities.<br>The contractor shall submit an application to the Employer for extension of time, stating the causes for delay, 7 days before the expiry of the Contract completion date.On receipt of an application from the contractor, the Employer shall consider all supporting details provided by the contractor and shall extend the Time for Completion as appropriate. |
| **7.4 Liquidated Damages for** | If the contractor fails to complete the Works within the Time for Completion, the contractor's only liability to the Employer for such failure shall be to pay |

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| | **Delay** | the amount stated in the SCC for each day for which he fails to complete the Works. The total amount of Liquidated damages shall not exceed the amount stated in the SCC. |
| **7.5** | **Bonus** | The Contractor shall be paid a Bonus calculated at the rate per calendar day stated in the SCC for each day that the Completion is earlier than the date for Time of Completion. The Employer shall certify that the Works are complete, although they may not be due to be complete. The total amount of Bonus shall not exceed the amount stated in the SCC. |

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| **8.** | **Taking-Over** | |
| **8.1** | **Completion** | The contractor may notify the Employer when he considers that the Works are complete. |
| **8.2** | **Taking-Over Notice** | The Employer shall notify the contractor when he considers that the contractor has completed the Works stating the date accordingly. Alternatively, the Employer may notify the contractor that the Works, although not fully complete, are ready for taking over, stating the date accordingly.<br><br>The Employer shall take over the Works upon the issue of this notice. The contractor shall promptly complete any outstanding work and, subject to Clause 9, clear the Site. |
| **9.** | **Remedying Defects** | |
| **9.1** | **Remedying Defects** | The Employer may at any time prior to the expiry of the period stated in the SCC, notify the contractor of any defects or outstanding work. The contractor shall remedy at no cost to the Employer any defects due to the contractor's design, materials, plant or workmanship not being in accordance with the Contract.<br><br>The cost of remedying defects attributable to any other cause shall be valued as a Variation. Failure to remedy any defects or complete outstanding work within a reasonable time of the Employer's notice shall entitle the Employer to carry out all necessary work at the contractor's cost. |
| **9.2** | **Uncovering and Testing** | The Employer may give instruction as to the uncovering and/or testing of any work. Unless as a result of any uncovering and/or testing it is established that the contractor's design, materials, plant or workmanship are not in accordance with the Contract, the Contractor shall be paid for such uncovering and/or testing as a Variation in accordance with Sub-Clause 10.2. |
| **10.** | **Variations and Claims** | |
| **10.1** | **Right to Vary** | The Employer may instruct Variations to increase or decrease the quantity of work or addition of new items or substitution of items included in the contract, if determined necessary due to technical reason during implementation of the contract. |
| **10.2** | **Valuation of Variations** | Variations shall be valued as follows:<br>a. where appropriate, at rates in the Contract, or<br>b. in the absence of appropriate rates, the rates in the Contract shall be used as the basis for valuation,<br>c. at appropriate new rates, as may be agreed or which the Employer considers appropriate, or<br>d. if the Employer so instructs, at daywork rates set out in the SCC for which the contractor shall keep records of hours of labour and contractor's Equipment, and of Materials used. |
| **10.3** | **Early Warning** | A Party shall notify the other as soon as he is aware of any circumstance which may delay or disrupt the Works, or which may give rise to a claim for additional payment. The contractor shall take all reasonable steps to minimise these effects. |

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| | The contractor's entitlement to extension to Time for Completion or additional payment shall be limited to the time and payment which would have been due if he had given prompt notice and has taken all reasonable steps. |
| **10.4 Right to Claim** | If the contractor incurs cost as a result of any of the Employer's Liabilities, the contractor shall be entitled to the amount of such cost. If as a result of any of the Employer's Liabilities, it is necessary to change the Works, this shall be dealt with as a Variation. |
| **10.5 Variation and Claim Procedure** | The contractor shall submit the Employer an itemised make-up of the value of Variations and claims within 30 days of the instruction or of the event giving rise to the claim. The Employer shall check and if possible agree the value. In the absence of agreement, the Employer shall determine the value. |
| **11. Contract Price and Payment** | |
| **11.1 Valuation of the Works** | The Works shall be valued as provided for in the SCC, subject to Clause 10. |
| **11.2 Monthly Statements** | The contractor shall be entitled to be paid at monthly intervals:<br>a. the value of the Works executed,<br>b. the percentage stated in the SCC of the value of Materials and Plant delivered to the Site at a reasonable time,subject to any additions or deductions which may be due.<br><br>The contractor shall submit each month to the Employer a statement showing the amounts to which he considers himself entitled. |
| **11.3 Interim Payments** | Within 30 days of acceptance of each statement, the Employer shall pay to the contractor the amount shown in the contractor's statement less retention at the rate stated in the SCC, and less any amount for which the Employer has specified his reasons for disagreement. The Employer shall not be bound by any sum previously considered by him to be due to the contractor. |
| **11.4 Payment of First Half of Retention** | One half of the retention and any such other retention shall be paid by the Employer to the contractor within 15 days upon expiry of Defects Liability Period. |
| **11.5 Payment of Second Half of Retention** | The remainder of the retention shall be paid by the Employer to the contractor within 15 days after submission of evidence document from the concerned Internal Revenue Office that the contractor has submitted his Income Returns. |
| **11.6 Final Payment** | Within 45 days of the latest of the expiry of the defects liability period, the contractor shall submit a final account to the Employer together with any documentation reasonably required to enable the Employer to ascertain the final contract value.<br><br>Within 30 days after the submission of this final account, the Employer shall pay to the contractor any amount due. If the Employer disagrees with any part of the contractor's final account, he shall specify his reasons for disagreement when making payment |
| **11.7 Currency** | Payment shall be in the currency stated in the SCC. |
| **11.8 Delayed Payment** | The contractor shall be entitled to interest at the rate stated in the SCC for each day the Employer fails to pay beyond the prescribed payment period. |
| **11.9 Advance Payment** | a The Employer may make advance payment to the contractor of the amounts stated in the SCC within 15 days, against provision by the contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to the advance payment. The Guarantee shall remain effective until the advance payment has been repaid, but the amount of the Guarantee shall be progressively reduced by the amounts repaid by the contractor. Interest shall not be charged on the advance payment.<br><br>b 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 |

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| | demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Employer/ Engineer.<br><br>c Unless otherwise stated in the SCC, the advance payment shall be repaid through percentage deductions from the monthly certified statements in accordance with this clause. Deductions shall commence in the next monthly statement in which the value of work executed exceeds thirty (30%) percent of the initial Contract Amount less provisional sums, day works and VAT. Deduction shall be made at the amortization rate of thirty (30%) percent of the amount of each monthly statement until such time as the advance payment has been repaid completely, provided that the advance payment shall be completely repaid prior to the end of 90 % of the approved contract period. |
| **11.10. Price Adjustment** | a) The Contract is subject to price adjustment only for construction material in accordance with this clause. If the Contract Agreement is concluded following the Invitation for National Level Bidding and after the signing of the Contract Agreement if the price of the construction materials stated in the SCC increase or decrease in an unexpected manner in excess of ten (10%) percent in comparison to the base price stated in the SCC, 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:<br><br>For unexpected increase in price<br>$P = [R_1 - (R_0 \times 1{,}10)] \times Q$<br><br>For unexpected decrease in price<br>$P = [R_1 - (R_0 \times 0.90)] \times Q$<br><br>Where:<br>" P" is price adjustment amount<br>" $R_1$" is the present price of the construction material<br>" $R_0$" is the base price of the construction material<br>" Q " is quantity of the construction material consumed in construction during the period of price adjustment consideration<br>(b) The Price Adjustment amount pursuant to the clause will be limited to a maximum of 25% of the initial Contract Amount unless otherwise is specified in the SCC |
| | b) The Price Adjustment provision pursuant to Clause 11.10 (a) shall not be applicable 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. |
| **11.11 Local Taxation & Value Added Tax** | a. 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.<br><br>b. 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. |
| **12. Termination of Contract** | |
| **12.1 Default by Contractor** | If the contractor abandons the Works, refuses or fails to comply with a valid instruction of the Employer or fails to proceed expeditiously and without delay or is, despite a written complaint, in breach of the Contract, the |

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| | Employer may give notice referring to this Sub-Clause and stating the default.<br><br>If the contractor has not taken all practicable steps to remedy the default within 15 days after the contractor's receipt of the Employer's notice, the Employer may, by a second notice given within a further 22 days, terminate the Contract. The Contractor shall then demobilize from the Site leaving behind Materials and Plant and any contractor's Equipment which the Employer instructs in the second notice to be used until the completion of the Works. |
| **12.2 Default by Employer** | If the Employer fails to pay in accordance with the Contract, or is, despite a written complaint, in breach of the Contract, the contractor may give notice referring to this Sub-Clause and stating the default. If the default is not remedied within 7 days after the Employer's receipt of this notice, the contractor may suspend the execution of all or parts of the Works.<br><br>If the default is not remedied within 30 days after the Employer's receipt of the contractor's notice, the contractor may, by a second notice given within a further 22 days, terminate the Contract. The contractor shall then demobilise from the Site. |
| **12.3 Insolvency** | If a Party is declared insolvent under any applicable law, the other Party may by notice terminate the Contract immediately. The contractor shall then demobilise from the Site leaving behind, in the case of the contractor's insolvency, any contractor's Equipment which the Employer instructs in the notice is to be used until the completion of the Works. |
| **12.4 Termination by Convenience** | Notwithstanding the above, the Employer shall be entitled to terminate the Contract in public interest, at any time at the Employer's convenience, by giving notice of such termination to the contractor. |
| **12.5 Payment upon Termination** | After termination, the contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following:<br><br>a. any sums to which the contractor is entitled under Sub-Clause 10.4,<br><br>b. any sums to which the Employer is entitled,<br><br>c. if the Employer has terminated under Sub-Clause 12.1 or 12.3, the Employer shall be entitled to a sum equivalent to 20% of the value of those parts of the Works not executed at the date of the termination,<br><br>d. if the contractor has terminated under Sub-Clause 12.2 or 12.3, the contractor shall be entitled to the Cost of his suspension and demobilisation together with a sum equivalent to 10% of the value of those parts of the Works not executed at the date of termination<br><br>The net balance due shall be paid or repaid within 30 days of the notice of termination. |
| **13. Risk and Responsibility** | |
| **13.1 Contractor's Care of the Works** | The contractor shall take full responsibility for the care of the Works from the Commencement Date until the date of the Employer's notice under Sub-Clause 8.2. Responsibility shall then pass to the Employer. If any loss or damage occurs to the Works during the above period, the contractor shall rectify such loss or damage so that the Works conform to the Contract.<br><br>Unless the loss or damage occurs as a result of an Employer's Liability, the contractor shall indemnify the Employer, the Employer's contractors, agents and employees against all loss or damage happening to the Works and against all claims or expense arising out of the Works caused by a breach of the Contract, by negligence or by other default of the contractor, his agents or employees. |
| **13.2 Force Majeure** | If a Party is or shall be prevented from performing any of its obligations by Force Majeure, the Party affected shall notify the other Party immediately. If |

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| | necessary, the contractor shall suspend the execution of the Works and, to the extent agreed with the Employer, demobilise the contractor's Equipment.<br><br>If the event continues for a period of 90 days, either Party may then give notice of termination which shall take effect 30 days after the giving of the notice.<br><br>After termination, the contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following:<br><br>a. any sums to which the contractor is entitled under Sub-Clause 10.4,<br>b. the Cost of his suspension and demobilisation,<br>c. any sums to which the Employer is entitled.<br><br>The net balance due shall be paid or repaid within 30 days of the notice of termination. |
| **14. Insurance** | |
| **14.1 Extent of Cover** | The contractor shall, prior to commencing the Works, effect and thereafter maintain insurances in the joint names of the Parties:<br><br>a. for loss and damage to the Works, Materials, Plant and the contractor's Equipment,<br>b. for liability of both Parties for loss, damage, death or injury to third parties or their property arising out of the contractor's performance of the Contract, including the contractor's liability for damage to the Employer's property other than the Works, and<br>c. for liability of both Parties and of any Employer's representative for death or injury to the contractor's personnel except to the extent that liability arises from the negligence of the Employer, any Employer's representative or their employees. |
| **14.2 Arrangements** | All insurances shall conform with any requirements detailed in the SCC. The policies shall be issued by insurers and in terms approved by the Employer. The contractor shall provide the Employer with evidence that any required policy is in force and that the premiums have been paid.<br><br>All payments received from insurers relating to loss or damage to the Works shall be held jointly by the Parties and used for the repair of the loss or damage or as compensation for loss or damage that is not to be repaired. |
| **14.3 Failure to Insure** | If the contractor fails to effect or keep in force any of the insurances referred to in the previous Sub-Clauses, or fails to provide satisfactory evidence, policies or receipts, the Employer may, without prejudice to any other right or remedy, effect insurance for the cover relevant to such default and pay the premiums due and recover the same as a deduction from any other monies due to the contractor. |
| **15. Resolution of Disputes** | |
| **15.1 Adjudication** | If any dispute shall arises out of or in connection with the Contract, including any valuation or other decision of the_Employer, then the parties shall attempt to settle such dispute amicably within 15 days of the notification of the Employer's decision. However if the dispute is not settled amicably or no attempt is made to settle the dispute amicably then the dispute shall be referred by either Party to adjudication in accordance with the attached Rules of Adjudication ("The Rules"). The adjudicator shall be any person agreed by the Parties. In the event of disagreement, the adjudicator shall be appointed in accordance with the Rules. |
| **15.2 Notice of Dissatisfaction** | If a Party is dissatisfied with the decision of the adjudicator or if no decision is given within the time set out in the Rules, the Party may give notice of |

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| | dissatisfaction referring to this Sub-Clause within 30 days of receipt of the decision or the expiry of the time for the decision. If no notice of dissatisfaction is given within the specified time, the decision shall be final and binding on the Parties. |
| **15.3 Arbitration** | A dispute which has been the subject of a notice of dissatisfaction, as per sub clause 15.2 shall be referred to a single arbitrator under the rules specified in the SCC. In the absence of agreement, the arbitrator shall be designated by the appointing authority specified in the SCC. Any hearing shall be held at the place specified in the SCC and in the language referred to in Sub-Clause 1.5. |
| **16.Conduct of Bidders** | 16.1 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.<br>16.2 The Bidder shall not carry out or cause to carryout the following acts with an intention to influence the implementation of the procurement process or the procurement agreement :<br>h) give or propose improper inducement directly or indirectly,<br>i) distortion or misrepresentation of facts<br>j) engaging or being involved in corrupt or fraudulent practice<br>k) interference in participation of other prospective bidders.<br>l) 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,<br>m) 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..<br>n) contacting the Employer wit 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 |

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| **17. Blacklisting Bidder** | 17.1 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:<br>g) if it is proved that the bidder committed acts pursuant to the Sub - Clause 16.2,<br>h) if the bidder fails to sign an agreement pursuant to ITB Sub – Clause 27.4,<br>i) 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 ,<br>j) if convicted by a court of law in a criminal offence which disqualifies the bidder from participating in the contract.<br>k) if it is proved that the contract agreement signed by the bidder was based on false or misrepresentation of bidder's qualification information,<br>l) other acts mentioned in the Bidding Data<br>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. |

# Section VI Special Conditions of Contract (SCC)

This SCC forms part of the Agreement

| Item | Clause | Data |
|---|---|---|
| Documents forming the Contract listed in the order of priority | 1.1.1 | **Document** (delete if not applicable)<br>a. The Agreement<br>b. Special Conditions of Contract<br>c. General Conditions of Contract<br>d. The Technical Specifications<br>e. The Drawings<br>f. The contractor's tendered design (if any)<br>g. The Bill of Quantities |
| Time for Completion | 1.1.12 | ***120 days from the date of Agreement*** |
| Law of Contract | 1.4 | Applicable Law of Nepal |
| Language | 1.5 | English or Nepali |
| Provision of Site | 2.1 | On the commencement date* |
| Authorised person | 3.1 | ***Will be notified after Contract Agreement*** |
| Name and address of Employer's representative (if known) | 3.2 | ***NEA, Biratnagar Reional Office, Taplejung Distribution Center, Taplejung.*** |
| Performance security :<br>Amount<br>Form | 4.4 | Performance Security Amount =[ (0.85 x Cost Estimate –Bid Price) x 0.5] + 5% of Bid Price. |
| Requirements for contractor's design (if any) | 5.1 | |
| Time for the submission of programme | 7.2 | Within **7 days** of the commencement date |
| Liquidated Damages for Delay | 7.4 | **0.05%** of Contract Price per day up to a maximum of 10%* of sum stated in the Agreement |
| Bonus or early completion (if any) | 7.4 | N/A |
| Period for notifying defects | 9.1 | **365 days** calculated from the Work Completion Date |
| Day work rates (if any) | 10.2 (e) | N/A |
| Percentage of retention | 11.3 | **5%** of each Payment made to the Contractor |
| Currency of payment | 11.7 | **Nepalese Rupees** |
| Advance Payment | 11.9 | **20 % of Contract Amount** |

# 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 **Boundary Wall Construction Works at Taplejung DCS.**

**Note: 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 affected. 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.

### 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 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.

## 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.

1.3.2 "Employer" shall mean **Nepal Electricity Authority Distribution & Consumers Services Directorate, Biratnagar Regional Office Taplejung Distribution Center Taplejung**

1.4 "Site Engineer" shall mean the employees deputed by the Employer.

1.4.1 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.

**2.9 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.

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, salta, 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/1 |
| 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 | | |
| 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) | | | | | | |
|---|---|---|---|---|---|---|
| | | | Ratio by Weight of Cement to Gravel Aggregate | | Ratio by Weight of Cement to Crushed Stone Aggregate | |
| **Workability** | **Water** | **Compressiv** | 20mm | 38mm | 20mm | 38mm |

| | **Cement Ratio** | **e Strength** in 28 days kg/cm$^2$ | size | size | size | 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 25-30mm | 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 |
| | 0.7 | 160 | 1:8.0 | 1:8.5 | 1:7.4 | 1:8.0 |
| Medium Slump 25-100mm | 0.4 | 360 | 1:3.5 | 1:3.8 | 1:3.1 | 1:3.6 |
| | 0.5 | 290 | 1:4.8 | 1:5.7 | 1:4.2 | 1:5.0 |
| | 0.7 | 160 | 1:6.8 | 1:7.9 | 1:6.2 | 1:7.0 |
| High Slump 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 |

Not withstanding 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.

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.*

## 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 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 $20m^3$ 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.

**5.6.14REINFORCEMENT 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 that 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:

| **Part** | **Materials** |
|---|---|
| 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 that 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 circumferences 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 - 5 | 20 – 5 | 40 – 20 | 20 -5 |

| Part of Structure | Days | Days | | Days | Days |
|---|---|---|---|---|---|
| a. Column & Walls | 1 | 2 | Do not remove forms until site cured test cylinders develop 50% of 28 days strength | ½ | 2 |
| 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

**7.1.1 Brick work in foundation and super structure.**

7.1.2 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.

7.1.3 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/mm$^2$. 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 ± 3mm in each direction. The compressive strength should be min. 7.0N/mm$^2$.

*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/mm$^2$ and 3.0 N/mm$^2$.

*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 that 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 sprit 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 fed 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 their times. Such freshly mixed mortar shall be used for the construction purpose, which shall be used for a maximum period for one hours 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 of Flemish bond unless otherwise specified. Every course shall be truly horizontal and wall shall be truly plumbed 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.

## *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 hall 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 be 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.

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 - 30º C & 30 ± 5% R.H) | Dry to touch – ½ hour |
| Re-coating Period | Minimum 4 hours (Temp. 30º 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

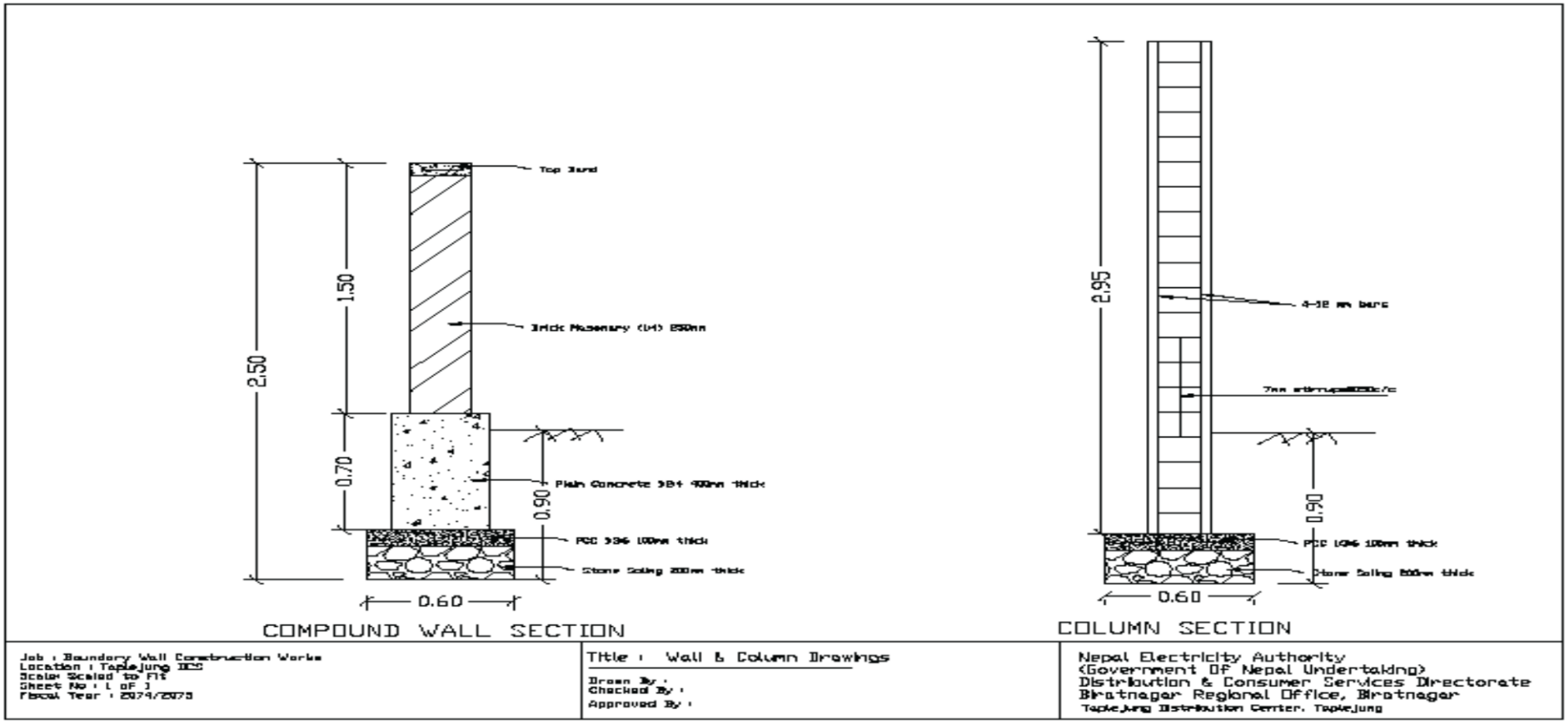
A round brush is considered the best for painting.

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 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.

# Section VIII. Drawing


Top Bund
Brick Masonary (1:4) 230mm
Plain Concrete 1:3:6 400mm thick
PCC 1:3:6 100mm thick
Stone Soling 200mm thick
2.50
1.50
0.70
0.90
0.60
2.95
4-12 mm bars
7mm @ 150c/c
0.90
0.60
COMPOUND WALL SECTION
COLUMN SECTION
Job : Boundary Wall Construction Works
Location : Taplejung DCS
Scale: Scaled to Fit
Sheet No : 1 of 1
Fiscal Year : 2073/2073
Title : Wall & Column Drawings
Drawn By :
Checked By :
Approved By :
Nepal Electricity Authority
(Government Of Nepal Undertaking)
Distribution & Consumer Services Directorate
Biratnagar Regional Office, Biratnagar
Taplejung Distribution Center, Taplejung

# 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 Boundary Wall Construction works at Taplejung DCS.*
*LOCATION : Taplejung*
***Tender No: NEA-TPLGDC-2073/074-01, Tender***

| ***S.N*** | ***Description of Works*** | ***Unit*** | ***Quantity*** | ***Rate*** | | ***Total Amount*** | ***Remarks*** |
|---|---|---|---|---|---|---|---|
| | | | | ***In Number*** | ***In Word*** | | |
| 1 | Site Clearance works cutting & uprooton herbs & shrubs ,top soil cutting ,removal waste all complete work. | job | 1.00 | | | | |
| 2 | 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. | Cum | 91.50 | | | | |
| 3 | Dry stone soling work in floor foundation finishing as per drawing or instruction of engineer. | Cum | 21.80 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | PCC M10 (1:3:6) with cement, sand & 10 to 38mm stone ballast proper mixing, laying & compaction,curing all complete | Cum | 8.70 | | | | |
| 5 | Plain Cement Concrete in foundation wall in 1:2:4 leading upto 30m around | Cum | 44.98 | | | | |
| 6 | 1st class brick masonary work in cement mortar (1:4) above ground level leading up to 30m around | Cum | 49.69 | | | | |
| 7 | Structural concrete in any form,size shape and level for all R.C.C. works in columns with cement, sand and crushed aggregate in 1:1.5:3 ratio (M20/20) including Mixing, laying, compacting, finishing and curing all complete | Cum | 12.84 | | | | |
| 8 | Straightening, cleaning, cutting and bending of tore steel reinforcement bar of different diameter for R.C.C: work including fixing in position all completeas per the site inchargedrawing, specification and instruction of Engineer | kg | 1,120.45 | | | | |
| 9 | Formwork & Centering and shuttering with approved materials such as wooden/Plywood 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. | Sqm | 374.42 | | | | |
| 10 | 20mm thick cement plaster (1:4) all complete as per direction of Engineer. | Sqm | 467.50 | | | | |
| 11 | Two coat of water proof cement paint painting works all complete as per direction of Engineer. | Sqm | 467.50 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 12 | Supplying and fixing Machine made readymade heavy coated GI wire mesh hexagonal size 100x120mm all complete as per direction of Engineer. | Sqm | 86.13 | | | | |
| 13 | MS iron compound gate(40 kg/m2) with plane sheet works including painting, lettering all complete as instruction of Engineer | Sqm | 13.75 | | | | |
| | | | | **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]* days[2] 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.*

# 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.*

# 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 (as applicable) | Issued by (as applicable) | Date of Issue | No. of Pages |
| 1 | Notarized Power of Attorney from the Company to Sign on Company's behalf (For Single Bidder) | | | | | |
| 2 | Joint Venture Agreement; ***If any*** | | | | | |
| 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 | | | | |
| 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 | | | | |